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STUDY OF BACILLARY INFECTIONS OF THE URINARY TRACT

Chairman's Address

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Despite the remarkable advances in chemotherapy during recent years, there still remain difficulties in the treatment of urinary infections. Within the span of about one decade, we have witnessed the successive introduction of mandelic acid, the sulfonamide compounds and the antibiotics, penicillin and streptomycin.

Mandelic acid proved to be decidedly superior to any formerly available drug, but was rapidly overshadowed by the surge of enthusiasm which attended the introduction of the sulfonamide drugs. However, the unpredictable toxic effects of the latter compounds, combined with their apparently waning potency against many strains of organisms now encountered, leave much to be desired in the treatment of urinary infections.

The introduction of penicillin constituted a major victory over gram-positive coccic infections, and now streptomycin is proving to be a valuable drug in the treatment of urinary infections due to susceptible strains of gram-negative organisms.

However, we are still confronted with persistent infections and resistant organisms. In our experience, urinary infections due to Pseudomonas aeruginosa have been found to be most frequently resistant. We therefore decided to study the activity of the various compounds against this organism in vitro and clinically, to determine the relation between in vitro sensitivity and clinical response in an endeavor to facilitate selection of the agent of choice in a given infection. We have also investigated some of the factors, such as urinary p_H, which influence the effectiveness of the respective chemotherapeutic agents.

PSEUDOMONAS AERUGINOSA

Pseudomonas aeruginosa is a gram-negative, motile bacillus, short and slender, usually measuring 1 to 2 microns in length and 0.3 micron in thickness. It ordinarily appears singly, but in acid mediums, and after exposure to antibiotics, it may appear in chains. The chain form is usually less virulent. Ps. aeruginosa is not unlike Escherichia coli in appearance, but is more slender.

Esch. coli and Aerobacter aerogenes ferment lactose, whereas Ps. aeruginosa and the Proteus vulgaris group do not ferment lactose.

Ps. aeruginosa colonies on the surface of blood plates may be recognized by their appearance and characteristic odor. Colonies are large, greenish gray and irregular. They have a peculiar sweet aromatic odor. The pigment may not be evident on blood agar, but is more apparent in a broth culture at room temperature. Further identification is made by the sugar reactions.

Ps. aeruginosa is commonly called Bacillus pyocyaneus (blue pus), because of the characteristic blue or greenish pigment which it produces sixteen to seventy-two hours after exposure to oxygen or alkalies.

The Pseudomonas is known to produce a large amount of alkali on most mediums, but it is a distinctive feature of this organism that it produces acid without gas on a glucose culture. The Pseudomonas itself produces an antibiotic substance, and Doisy [1] and his co-workers at St. Louis University have isolated and purified the elaborated antibiotic substance, which is active against gram-positive organisms.

Pathologic Considerations.—Formerly considered a commensal and negligible contaminant to be ignored as harmless or easily controlled, the Pseudomonas is now recognized as a pathogenic organism capable of producing serious infection. For years, the organism has been commonly observed in external wounds, and in otitis media in undernourished children, but of late many reports are appearing in the literature of other sites affected. For example, Moragues [2] reported a fatal case of endocarditis due to Ps. aeruginosa. Evans [3] recently reported 2 fatal cases of infection with this organism following spinal taps. Stubborn pyocyaneus infections, invading wounds of soldiers in World War II —preventing and interfering with healing and skin grafting—have been reported. But it is in the urinary tract that the organism is most frequently encountered. We find it affecting the kidney and bladder, the prostate and epididymis.

The infection is characterized by systemic toxic symptoms, chills and fever, frequency and urgency of urination. Ulcerations and large areas of denuded

Read before the Section on Urology at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1947.

1. Doisy, E. A.; Hays, E. E.; Wells, I. C.; Katzman, P. A.; Cain, C. K.; Jacobs, F. A., and Thayer, S. A.: Antibiotic Substances Produced by Pseudomonas Aeruginosa, J Biol. Chem. **159**: 725-750 (Aug.) 1945.
2. Moragues, V., and Anderson, W. A. D.: Endocarditis Due to Pseudomonas Aeruginosa, Ann. Int. Med. **19**: 146-154 (July) 1943.
3. Evans, F. T.: In Section from Spinal Analgesia: Warning, Lancet **1**: 115 (Jan. 27) 1945.

mucous membrane are not uncommon in the bladder. Necrotic sloughs of long stringy material are often noted in the urine, due to burrowing of the organism into the deeper structures of the tissue. Its tendency to develop a high alkalinity causes severe burning on urination, which may be caustic in character. Alkaline

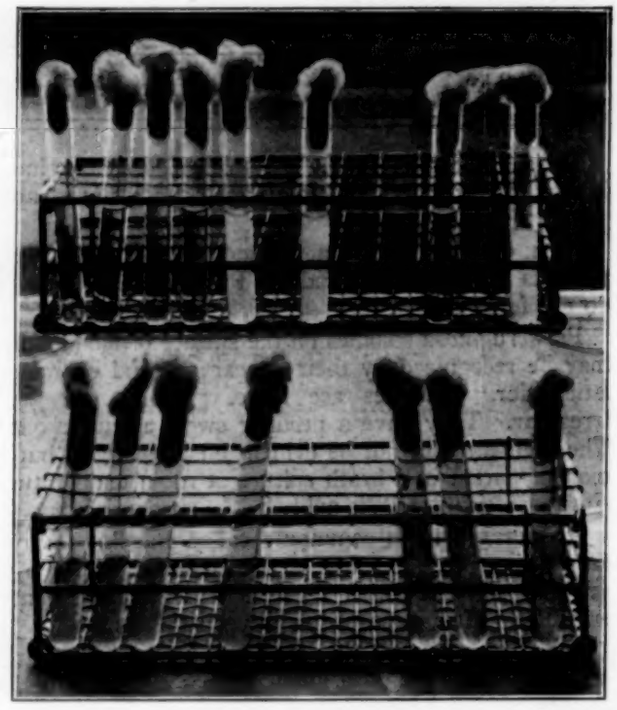

Fig. 1.—Photographs of actual sensitivity test of Pseudomonas aeruginosa demonstrating inhibition (clear tubes) produced by streptomycin up to 0.5 micro unit dilution (upper left); by mandelic acid 1 per cent in p_H 5.5 (upper right tubes); no inhibition (turbidity) with sulfadiazine (lower left) and no inhibition with penicillin (lower right).

incrustation is often seen producing a gritty material in the urine and causing formation of stones or a leukoplakia type of bladder. It may cover the entire bladder wall and honeycomb indwelling catheters, occasionally causing a complete block. Abscess formation is seen in the prostate or epididymis.

The organism is resistant to heat up to 60 C., but is apparently destroyed by the usual mercuric cyanide and iodide solutions used in urologic practice. Cultures taken from catheter washings and instruments failed to develop growth.

IN VITRO STUDIES

The study reported here comprised 39 patients with persistent infection of the urinary tract due to a gram-negative organism. Cultures were made from the urine, aseptically collected, and the organism or organisms isolated and identified. Each organism was subjected to tests for sensitivity to sulfadiazine, penicillin, streptomycin and mandelic acid.

The results of the sensitivity tests were available in twenty-four to forty-eight hours, and therapy was instituted as indicated by the laboratory results. Clinical treatment and results were correlated with the laboratory findings.

The in vitro studies were carried out by the accepted bacteriologic methods, the organism being tested against sulfadiazine in concentrations of 50 mg., 25 mg. and 10 mg. per cubic centimeter; penicillin in concentrations of 500, 100 and 50 units per cubic centimeter; streptomycin in 25, 10, 2, 1, 0.5 and 0.1 micro units per cubic centimeter, and mandelic acid in 1 per cent solution. The routine sensitivity tests were made at a p_H of 7.6 in "difco" nutrient broth culture. That of mandelic acid was adjusted to a p_H of 5.5.

These studies indicated the following conclusions: 1. Sulfadiazine, in therapeutically practical concentration, is not effective against the Pseudomonas and related organisms studied. 2. Penicillin, in therapeutically practical concentrations, is likewise ineffective. 3. Mandelic acid in 1 per cent concentration, which is therapeutically easily attainable, is effective provided that the p_H is 5.5. 4. Streptomycin, in concentrations of 0.1 to 10 units, at a p_H of 7.6, which is easily attainable in the blood and urine, is effective against most of the strains of Pseudomonas and related organisms studied. However, there was a wide variation in the sensitivity of the organisms studied, and in some cases the Pseudomonas was so resistant as to be unaffected at the highest levels of concentration.

Effect of p_H on Susceptibility.—A study was also made of the effect of streptomycin on the organisms at different p_H. The mediums first adjusted to p_H 8, p_H 7.6 and p_H 5.5, respectively. Concentrations of streptomycin of 0.1, 0.5, 1, 2, 10, 25, 50 and 100 were set up in test tubes at each p_H mentioned. The same amount of the test organisms was inoculated into these tubes; namely, 0.1 cc. of 1 to 100 dilution. The tubes were read for turbidity at the end of twenty-four hours and checked at forty-eight hours.

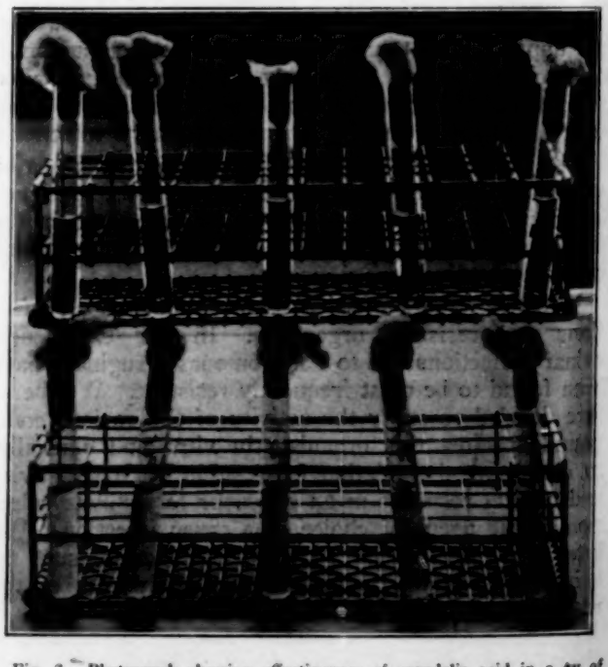

Fig. 2.—Photograph showing effectiveness of mandelic acid in a p_H of 5.5 against four different strains of Pseudomonas aeruginosa. The upper row contains 1 per cent mandelic acid causing complete inhibition. The lower shows growth (turbid) in a p_H of 5.5 but without mandelic acid.

The results of this study indicated that the effectiveness of streptomycin is dependent on the p_H. In this series, it was most effective at p_H 7.6 It was less effective at a p_H of 5.5 and likewise less effective at a p_H of 8. This observation is somewhat at variance with those of other workers, who have reported that

the more alkaline the mediums, the more effective is streptomycin. Our observations are too limited to be final, but we believe that they deserve serious consideration.

In a few organisms originally studied, it did appear that the higher the p_H, the greater the effectiveness

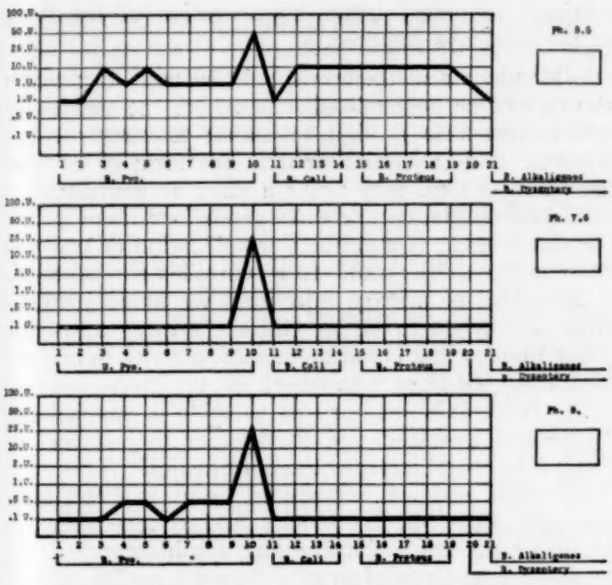

Fig. 3.—Chart demonstrating the effectiveness of streptomycin in p_H 5.5, 7.6 and 8 respectively. The optimum is a p_H of 7.6.

of the drug. For example, the organism isolated from patient S. indicated the following: At a p_H of 6, with a streptomycin concentration up to 100 micro units, there was no effect. At a p_H of 7.6, 50 micro units caused inhibition but 25 micro units failed to do so. At a p_H of 8, inhibition was caused with concentrations of 50 and 25 micro units, but there was no effect with 10 micro units.

Bacterial Resistance.—It has been pointed out repeatedly by a number of observers that the effectiveness of streptomycin in vivo is limited by the ease with which ordinarily susceptible organisms develop resistance to it. Keefer, Hinshaw and others have stated that this effect is the most serious drawback to its use.

We made an effort to study this phenomenon in vitro in the following manner: Organisms were titrated in streptomycin at various titrations. The next titration was made from the highest dilutions of streptomycin which contained growth. This was repeated two times, until it was evident that there was a difference in the original titration and the one exposed to streptomycin. After the third titration, at twenty-four hour intervals, the original culture and that which had been exposed to streptomycin were titrated. This was repeated again to check the original titration against the other. (Each titration was made with a fresh culture of eighteen and twenty-four hours, with no strepmycin in broth of the p_H to be used in the test.)

It was found that organisms taken from cultures which had previously been exposed to a subbacteriostatic concentration of streptomycin required a higher concentration of streptomycin to prevent growth than before exposure to streptomycin. This was noted with approximately 30 per cent of the organisms studied. Herrell, in a paper presented at the Antibiotic Research Conference in Washington, D. C., Feb. 1, 1947, stated that this occurred in 30 to 45 per cent of the organisms which he had studied.

In our studies, we also made a comparison of relative increase in resistance at a p_H of 6, 7.6 and 8. It was noted that resistance was least at a p_H of 7.6 and greater at a p_H of 8 and greatest at a p_H of 5.5.

It is questionable whether the organisms actually develop resistance or whether it is the emergence of resistant organisms within a given strain. Although no actual proof is available on this question, the phenomenon noted is thought by many bacteriologists to be due to a survival of forms in a culture which have acquired resistance. The apparent decrease in the acquired resistance noted in alkaline mediums may then be due to the fact that increased numbers of resistant organisms are affected in an alkaline medium.

Dr. Bondi [4] stated in a recent article:

> Proof that resistant cells were present in one of the original susceptible cultures was obtained by testing the susceptibility of a large population of the culture. A total of 5 cc. of broth culture of each strain of A. aerogenes was plated in a series of agar plates containing 500 micrograms of streptomycin per cubic centimeter of agar. Not a single colony developed on the plates inoculated with strain J. M. . . . On the plates inoculated with strain F. V. . . ., however, two colonies developed which on subsequent testing were not inhibited by 1,000 micrograms of the drug. It appears that of the approximately 5 billion cells of this strain tested there were two resistant variants. It is obvious that if a smaller population had been tested these resistant variants would not have been detected. No doubt strain J. M. likewise has similar resistant variants, but still larger populations must be tested before they are detected.

CLINICAL RESULTS

Many factors enter into the results observed in the test tube study of sensitivity of a strain of organisms—the density of the culture, the age of the culture, the growth phase and the constituents of the mediums.

But there are still more variables when an in vitro observation is transferred to the complicated reactions of the human body. It is a well known fact that the antibiotic influences set up within the body are superior to any antibiotic introduced into the body. For example, Sir Alexander Fleming, long before introducing penicillin, described a leukocytic reaction to infection as lysis, and we are all familiar with the antibodies constantly at work in our body.

It is not possible here to give a detailed report of the 39 patients treated, but the following observations were made:

1. There was a close connection between the in vitro results and the clinical response. All patients responded satisfactorily to streptomycin when the infecting organism was demonstrated to be inhibited in vitro by 10 micro units or less per cubic centimeter. Conversely, streptomycin therapy failed when the isolated organism was demonstrated in vitro to require 25 micro units or more per cubic centimeter for inhibition. We observed no exception to this. An example of high bacterial resistance occurred in patient S., in whom the infecting organism showed initial inhibition with 25

4. Bondi, A., Jr.; Ottenberg, D.; Dietz, C. C., and Brown, C. L.: Streptomycin Therapy in Infection of Urinary Tract, J. A. M. A. **132**: 634-635 (Nov. 16) 1946.

micro units. He was given 3 Gm. of streptomycin daily for seven days, and at the conclusion of treatment not only was the organism present, but the concentration of streptomycin required for inhibition of the organism then isolated was increased to 100 micro units. This patient is still unrelieved of his infection. This same organism was studied by the previously described method in vitro, and we found that its resistance was increased in varying amounts according to the p_H of the mediums. Mandelic acid was ineffective because the urine remained alkaline despite all measures to produce acidity.

2. In patients in whom the urine did not become clear within three days, prolonged streptomycin treatment failed to have any effect.

3. In 8 of the cases, the infection recurred, although at the conclusion of treatment the urine cultures were clear. In all of these cases, recurrence was associated with some form of obstructive lesion, such as hydronephrosis, hydroureter or diverticulum. In about 30 per cent of the infections which occurred, the organism isolated after treatment was demonstrated to have developed increased resistance. In 4 patients, urine cultures became negative after five days' treatment with 1 Gm. of streptomycin daily. The in vitro sensitivity test caused inhibition with 1 micro unit of streptomycin per cubic centimeter. After two weeks, the infection returned and the organism cultured showed no increase in resistance. One of these patients had a poorly emptying hydronephrosis of a lone kidney, and another had a hypertrophied prostate which has since been removed transurethrally. Three patients in whom the infection recurred showed a hundredfold increase in the concentration of streptomycin required for inhibition after treatment. Two of these patients were successfully treated with mandelic acid therapy and then continued on methenamine mandelate for two weeks thereafter, to insure against recurrence.

4. Mandelic acid therapy was effective in all cases when a p_H of 5.5 was obtained.

5. Streptomycin was apparently more effective in an alkaline urine.

6. Organisms were evidently made more resistant in an acid medium, and when once resistant they remained so. Not all organisms which persisted or returned showed increased resistance.

7. Mandelic acid was effective in those resistant to streptomycin when a p_H of 5.5 could be attained.

TREATMENT

As a result of these studies, we have derived certain conclusions concerning the treatment of these persistent, gram-negative bacillary infections, which may be summarized as follows:

1. Sensitivity tests of the infecting organisms should be made routinely against sulfadiazine, streptomycin and mandelic acid to determine the drug, the dosage and the p_H which may be expected to yield optimum results.

2. The p_H of the urine should be determined twice daily. This can be done easily with nitrazine paper by the nurse or patient.

3. Alkalinity can be obtained by an alkaline ash diet, and 2 drams (8 cc.) of 50 per cent solution of sodium citrate given by mouth every four hours.

4. Acidity can be obtained by an acid-ash diet and nitrohydrochloric acid or ammonium chloride.

5. Unless very poor renal function exists, fluids are restricted to obtain better concentration of the drug for the few days required.

6. Mandelic acid therapy should be used in patients who cannot be hospitalized, and where the sensitivity tests demonstrate a high resistance to streptomycin. Mandelic acid is administered in the form of calcium mandelate, 3 Gm. four times a day; or methenamine mandelate tablets, two or three given four times a day. The latter agent is a chemical combination of methenamine and mandelic acid. In a controlled clinical study of 200 cases of urinary infection,[5] we found methenamine mandelate to be an efficient urinary antiseptic of low toxicity and broad therapeutic activity in urinary infections. Sodium mandelate, 25 cc. given intravenously twice daily, has proved valuable in supplementing peroral mandelic acid therapy, or in instances in which the peroral treatment is not practical. This form of mandelic acid was introduced by us in 1940, after thorough study of its toxicity and concentration in the urine following intravenous administration. By quantitative analysis of urine collected from 28 patients receiving 25 cc. of the 20 per cent solution intravenously, it was determined that an adequate concentration of the drug (0.5 to 1 per cent) could be maintained for eight hours. We have used it routinely in the office and in the hospital to supplement the peroral therapy, or substitute it entirely, where indicated.

7. Thorough urologic examinations are essential, and obstructive lesions or pockets must be relieved if drug therapy is to be successful.

CONCLUSIONS

A clinical and laboratory study has been made of 39 patients with persistent infections caused by Pseudomonas aeruginosa and its related organisms.

Fairly reliable information concerning the most suitable drug and optimum dosage in a given infection can be obtained by in vitro sensitivity tests, and it is recommended that these be more routinely adopted in medical practice.

Mandelic acid and streptomycin have been found to be the most effective drugs in the treatment of Pseudomonas aeruginosa infections of the urinary tract. Penicillin and the sulfonamide compounds are relatively ineffective.

Streptomycin is most effective in alkaline urine, whereas mandelic acid requires an acid urine.

Increased resistance of organisms to streptomycin therapy is probably due to the emergence of resistant strains. It is therefore necessary to determine the susceptibility of the infecting organisms and administer initial doses sufficient to control the infection rapidly. If bacterial resistance is permitted to develop after inadequate dosage or improper p_H even greatly increased dosages may fail to control the infection.

5. Carroll, G., and Allen, H. N.: Treatment of Urinary Infections with Mandelamine (Methenamine Mandelate): Clinical Study of Two Hundred Cases, J. Urol. 55: 647-681 (June) 1946.

REDUCING MORTALITY IN GASTRIC CARCINOMA

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Carcinoma of the stomach kills more people annually than carcinoma of any other organ. Approximately 38,000 die annually in these United States of gastric carcinoma. When one considers that one fifth of all deaths from carcinoma are due to a gastric lesion it makes one stop, look and think. Since one person dies of carcinoma roughly every four minutes, this means that one person dies of gastric carcinoma in the United States every eighteen minutes. This is startling, and physicians should be stimulated to do something to reduce this high mortality.

In 1944 I reviewed and reported on diagnostic delay in gastric carcinoma.[1] Another review at this time shows little change in those figures. One can, however, point out the causes of the high mortality, and I believe that these causes can be modified.

All physicians know the low percentage of operability of the cases coming to the surgeon. In 1944 at Lankenau Hospital operability in reference to a curative operation was only 17 per cent. At the present time the operability with hope for cure is 18 per cent of all diagnosed cases. Abrahamson and Hinton[2] reported about 14 per cent of their series operable with hope for cure. Thus the possibility of salvage is low. Some clinics report that as high as 20 per cent of all diagnosed gastric carcinomas are operable with hope for cure. Even so, a hope of salvaging only one fifth of all cases is a dismal hope.

Operability figures of my associates and I for gastric carcinoma now are as follows in a series of 243 cases.

Cases which were not considered for operation when first seen were 68, or 28 per cent of the total group. Operations were not done in this group because of ascites, metastatic nodes, involvement of the abdominal wall, moribund state, etc.

The next group of cases were those in which the abdomen was opened and closed. This group comprised 87, or 36 per cent of the total cases seen. We opened the abdomen in every case in which there was no metastasis or ascites and in which the patient was even a poor to fair operative risk.

In 44 cases, or 18 per cent of the total group, we opened the abdomen and were able to do a palliative operation such as gastroenterostomy to relieve obstruction.

Finally, the cases in which an attempted curative operation could be performed made up only 43, or 18 per cent of the total group.

It is horrifying to think that for all reported papers the possibility of cure by operation is only between 14 and 21 per cent of all cases of carcinoma of the stomach.

What are the reasons for this low percentage of operative possibility? The answer is twofold: the difficulty in the diagnosis and the delay that takes place all along the line.

DIFFICULTY IN DIAGNOSIS

The diagnosis is indeed difficult to make and by the time that most of the classical symptoms appear the disease is well advanced. I have searched through our cases to see what the earliest symptoms might be which may lead one to become suspicious of a possible gastric carcinoma. I considered pain, loss of weight, anemia, nausea, hematemesis and a palpable mass, and discarded all of these as possible early signs.

The only early consistent symptoms that I felt gave an early indication to pursue studies were: a tired and weak feeling, loss of appetite, loss of desire for meat and indigestion (mild distress related to meals). If one considers the possible location of a carcinoma in the stomach, the only ones which will give real symptoms early are the ones in the prepyloric area, causing obstruction, or in the cardia, causing cardiospasm or obstruction at the esophagogastric junction. One may have a relatively large carcinoma in other locations without early symptoms.

Therefore a history of fatigue and loss of appetite, particularly for meat, associated with discomfort either before or after eating, is enough evidence to demand a complete gastric study.

A history of gastric carcinoma in the family should make one more suspicious than ever. Thirteen of our patients gave a history of carcinoma of the stomach in the previous generation.

Thus one must do a complete gastric study on patients presenting only slight symptoms if one hopes to make an early diagnosis.

STUDIES WHICH AID IN MAKING DIAGNOSIS

I believe that the most important studies which aid in making the diagnosis are roentgen examination of the stomach, gastroscopy, fractional test meal, serum protein determinations and complete blood count. I will discuss each of these in turn.

First, roentgen study of the stomach is the most important study to be done, but in a number of cases is in itself not diagnostic but definitely an aid in diagnosis. There is, first of all, an error in the roentgen diagnosis of a lesion of the stomach (either ulcer or carcinoma) in 18 per cent of our cases. After a lesion of the stomach was found by roentgen examination the error as to whether it was carcinoma or ulcer was 34 per cent. Thus there is an error in roentgen study, and it is not infallible; nevertheless, roentgen examination is the first important step in the diagnosis.

The next aid to diagnosis is gastroscopy. This procedure was originally described by Kussmaul,[3] who first attempted to use it but without success. Mikulicz[4] was the first to make successful use of the gastroscope, but it finally was popularized by Wolf and Schindler,[5] who perfected it. This I realize is not available to all, but it is of great value. It is not without its dangers, particularly in older patients with friable tissue, but it is a relatively safe procedure in the large majority of cases. The error in gastroscopic examinations in our series of cases in diagnosing a gastric lesion was 17 per cent, but the error in differentiating a lesion

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1. Engel, G. C.: Diagnostic Delay in Gastric Carcinoma, Pennsylvania M. J. **48**: 126-129, 1944.
2. Abrahamson, R. H., and Hinton, J. W.: Gastric Carcinoma, Surg., Gynec. & Obst. **84**: 481-490, 1947.
3. Kussmaul, A.: Ueber die Behandlung der Magenerweiterung durch eine neue Methode Mittelst der Magenpumpe, Deutsches Arch. f. klin. Med. **6**: 455-500, 1869.
4. Mikulicz, J.: Ueber Gastroskopie und Oesophagoskopie, Wien. med. Presse **22**: 1405-1408, 1881.
5. Schindler, R.: Gastroscopy: The Endoscopic Study of Gastric Pathology, Chicago, University of Chicago Press, 1937, p. 57.

between ulcer and carcinoma was 20 per cent. So, again, a test is available which is an aid but not without its error.

If, however, roentgen and gastroscopic examinations are done on a patient, then the error of locating a lesion in the stomach is cut down to 8 per cent, and the differentiation between ulcer and carcinoma shows an error of only 14 per cent. Thus the combined study cuts the percentage of error.

My belief as to roentgen examination and gastroscopy, which I have expressed before,[6] is that they are both aids in diagnosis.

Should the roentgen examination show evidences of a gastric lesion and this is confirmed by roentgen examination after an antispasmodic, then a negative gastroscopic examination should be ignored.

The same holds true should the roentgen examination be negative and gastroscopic examination be positive for a gastric carcinoma.

The fractional test meal is another link in our chain of evidence. In 60 cases in which operations were performed determinations of gastric acidity were done before operation. Of these only 9, or 15 per cent, had an elevated acidity. Normal gastric acidity was found in 33, or 55 per cent, and low gastric acidity was present in 18 cases, or 30 per cent. Here again, this test is not totally dependable but is a definite aid when observations are summarized.

The serum protein determinations can be of value in making a diagnosis. Of 87 cases which had this study 49, or 56 per cent, had serum protein levels below 6 Gm. per hundred cubic centimeters. Of the 87 cases, in 7, or 8 per cent, the levels were below 4.5 Gm.; in 16, or 18 per cent, the levels were between 4.5 and 5.5 Gm., and in 26, or 30 per cent, between 5.5 and 6 Gm. There were 38 cases, or 44 per cent of the cases, in which the serum protein was above 6 Gm. In view of the fact that the serum protein was low in 56 per cent of the cases studied with normal volumes, I believe that here again is a diagnostic aid which must be recognized and used.

As to the value of the blood cell count, I should like to mention in passing that perhaps it can be a pitfall as well as an aid. Some of our cases presented a definite anemia. This anemia was at times a macrocytic type, and in other cases a microcytic hypochromic type of anemia was present. One may easily be led to make a diagnosis of pernicious anemia because of a low count and achlorhydria. I believe that in any cases in which pernicious anemia has been the diagnosis a gastric roentgenogram should be made and that gastric carcinoma should be considered a possibility until proved otherwise. The most common type of anemia encountered was a microcytic hypochromic type. This is probably due to chronic loss of blood and malnutrition. The macrocytic type of anemia, which is probably due to loss of intrinsic factor, can easily appear as pernicious anemia. This has been reported also by Snell.[7]

Other physiologic changes which occur, such as hemoconcentration, reduction in fixed base of the serum, increase in urea, diminution of plasma chlorides and an increased ability of blood to combine with carbon dioxide, are usually secondary to pyloric obstruction. There also seems to be a loss of vitamin K and of water soluble B complex; both losses apparently are due to low intake. All of these changes are not important as an aid in diagnosis but definitely must be considered and corrected in the preparation of the patient for operation.

I have so far tried to point out the perhaps insignificant symptoms which should make obligatory complete gastric studies on any patient. The important studies which were of value in our analysis were roentgen examination, gastroscopy, determinations of gastric acidity, determinations of serum protein and complete blood cell count.

DELAY A FACTOR IN HIGH MORTALITY

The second factor which accounts for the high mortality is delay. This factor should be discussed under the following separate headings: delay in the onset of symptoms, delay in the patient's going to the physician, delay on the part of the physician in having adequate studies done, the physician's delay in surgical consultation and operation and the delay on the part of the patient in following the advice of the physician or surgeon.

Delay in Onset of Symptoms.—As to the delay in the onset of symptoms, one must realize that much depends on the type of carcinoma and its location. For example, a growth occurring near the pylorus causing early obstruction may produce symptoms rather promptly. In contrast, a lesion occurring in the fundus may go without symptoms for months. Since the symptoms occurring from gastric carcinoma are due to constriction of the gastric lumen, associated gastritis, pyloric obstruction or hemorrhage, it is clear that a growth may be well advanced before symptoms occur. Just recently I operated on a 52 year old man with symptoms of only three weeks' duration, and roentgenograms showed a prepyloric lesion with some slight delay in emptying. At operation an extensive carcinoma was found which was hopelessly inoperable, and only a palliative procedure could be done. This should teach one that when gastric symptoms occur prompt action is demanded.

The following case illustrates delay in the onset of symptoms.

> The patient was a woman of 54 years. Her chief complaint was weakness and loss of appetite. She had been well until one month before admission. A roentgenogram showed a questionable lesion of the lesser curvature of the stomach. By means of gastroscopy carcinoma of the lesser curvature of the stomach was diagnosed. The hemoglobin was 76 per cent, and there were 4,000,000 red blood cells. The serum protein was 5 Gm. per hundred cubic centimeters. At operation carcinoma of the lesser curvatures of the stomach was found with metastasis to the liver and aortic nodes. The operation consisted of an exploratory procedure and closure.

Delay in Patient's Consulting Physician.—In an analysis of 2,000 cases of cancer in Pennsylvania by the State Cancer Commission the figures on the delay in going to the physician of persons with carcinoma were startling: 15.9 months for white women, 16.6 months for white men, 15.0 months for Negro women and 9.9 months for Negro men. One must then realize that the average patient of today tries every type of cure advertised for indigestion before ever going to see a physician. This can be corrected only by education of the public. A considerable amount of this education is being carried out, but considerable

6. Engel, G. C.: Carcinoma of the Stomach and Its Problems, Clinics 4: 13-26, 1945.
7. Snell, A. M., cited by Walters, W.; Gray, H. K., and Priestley, J. T.: Carcinoma of the Stomach, Philadelphia, W. B. Saunders Company, 1942.

more must be done. This is a job for organized medicine and is truly its responsibility. I should like to state that one reason given to me by patients for not seeking a physician's advice earlier is the following fact. They had gone to a physician for a check-up because of the thought of a possible cancer, and their physician laughed at them. I realize that there are a number of neurotic patients, but one should always take a patient seriously when he comes for a check-up to prevent cancer. The following case emphasizes the delay on the part of the patient in consulting a physician.

The patient was a woman 38 years of age. Her chief complaint was that she could not swallow. She had had difficulty in swallowing for one year, and had consulted a physician three weeks before admission. She had lost 10 pounds (4.5 Kg.) in the previous three weeks. Her father had died of gastric carcinoma twenty-one years before. A roentgenogram showed obstruction at the lower end of the esophagus from carcinoma, which also involved the lesser curvature of the stomach. Studies of the blood showed 72 per cent hemoglobin, 3,800,000 red blood cells and 4.79 Gm. of serum protein per hundred cubic centimeters. The operative findings were carcinoma of the lesser curvature of the stomach involving the prepyloric area and extension of the carcinoma up the esophagus with generalized metastasis. Operation consisted of exploration and closure.

Physician's Delay in Having Adequate Studies Done.—The next delay is that attributed to the physician. This can be totally eliminated if the physicians of America are conscious of the possibility of carcinoma of the stomach and act promptly. One must realize, as has been pointed out, that the early symptoms are vague, the two most important ones being fatigue and loss of appetite. Every patient with these symptoms should not be given medicine but should have an immediate gastric roentgen examination. By doing this study promptly one may detect early gastric carcinomas. Every person with possible pernicious anemia should also have a gastric roentgen examination. If the physician is conscious of these early symptoms and has a prompt roentgen examination made of his patient it will be a great help. The physician must not forget that the patient has tried all the medical preparations and vitamins before he came to him.

I should like to point out here the survey reported by St. John and his colleagues[8] in 1944. They did a fluoroscopic and a roentgen examination of the stomach and duodenum in 2,413 cases. The only criteria established were that the persons selected should not have had any gastric complaints at any time. Their survey revealed 3 cases of gastric malignant growths, 5 cases of gastric ulcer, 54 cases of duodenal ulcer and 1 case of gastric polyp. These findings were in cases in which there was a negative gastric history.

Thus the physician should immediately order a gastric roentgenogram for any patient with the slightest suggestion of gastric disease in his history. I have had physicians excuse their delay on the basis that gastric roentgenograms were too expensive for their patients. If this is true, and I have no doubt it is in a number of cases, then it becomes the responsibility of the roentgenologist to see to it that in his community his services and services of his department are available for gastric studies at suitable rates for different income groups. The study can be limited to esophagus, stomach and duodenum.

8. St. John, F. B.; Swenson, P. C., and Harvey, H. D.: Experiment in Early Diagnosis of Gastric Carcinoma, Ann. Surg. **119**: 225-231, 1944.

The following case illustrates delay on the part of the physician.

The patient was a man 46 years old. His chief complaint was loss of appetite with some distress after eating. He had experienced distress after eating six months before going to the physician. Antacids were administered without any tests being done. The patient improved and was well for eight months, symptom free. The symptoms returned, accompanied by vomiting. A roentgenogram taken at this time showed obstructing carcinoma of the pylorus. The patient was referred to a surgeon. The operative findings were extensive carcinoma of the stomach with obstruction of the pylorus and metastasis. The operation consisted of palliative gastroenterostomy.

The Mayo Clinic reports[7] showed that 81 per cent of the patients with gastric carcinoma became free of symptoms for a time on a strict medical regimen for ulcer. This can be misleading, and one must keep in mind this possibility.

Physician's Delay in Surgical Consultation and Operation.—As to the delay on the part of the physician in referring the patient to a surgeon, certain factors should be pointed out. Once the physician has made a diagnosis of a gastric lesion (regardless of the differentiation between ulcer and carcinoma) I believe that the following should be the routine. A strict medical regimen should be observed for a period of four weeks. At the end of this period the patient is given another roentgen examination. At this time to allow continuation of medical treatment the following conditions must be fulfilled: (1) The patient is then asymptomatic and (2) roentgenogram or gastroscopy—preferably both—indicates that the ulcer has healed. If these two conditions have not been fulfilled, the patient should be referred to a surgeon without further delay.

A case in point of delay on the part of the physician to refer the patient to a surgeon is as follows:

The patient was a man 75 years old. His chief complaint was weakness and loss of appetite. A roentgenogram showed a gastric ulcer of the lesser curvature two and one-half years before admission. On medical treatment the patient gained 28 pounds (12.7 Kg.) in six months and was asymptomatic. A second roentgenogram at that time showed the ulcer to be present but much smaller. The patient was symptom free fourteen months before admission. A roentgenogram showed a small ulcer to be present. A roentgenogram two weeks before admission suggested gastric carcinoma. Vomiting began one week before admission. Studies of the blood showed 59 per cent hemoglobin, 2,930,000 red blood cells and 4.8 Gm. of serum protein per hundred cubic centimeters. The operative findings were extensive gastric carcinoma with metastasis and obstruction. The operation was palliative gastroenterostomy.

This case should point out the dangers of continued medical treatment in the presence of a persistent gastric lesion as indicated by roentgenogram even though the patient was free of symptoms. No one can be sure when one treats a gastric lesion whether one is dealing with an ulcer or a carcinoma, and the fact that the patient is symptom free on medical treatment proves nothing.

Patient's Delay in Following Advice of Physician or Surgeon.—The last of the group of delays is that attributed to the patient in not following out the physician or surgeon's advice. This is difficult to overcome, and it takes painstaking explanations on the part of the physician. The old saying that "you can lead a horse to water but you can't make him drink" is indeed true in a number of cases.

The following case illustrates this point.

The patient was a man 70 years old and was the brother of a physician. His chief complaint was weakness and inability to eat. A roentgenogram showed a possible carcinoma on the lesser curvature of the stomach two years before admission. Operation was advised by the gastroenterologist eighteen months before admission. The patient wanted to think it over. Studies of the blood count showed 65 per cent hemoglobin, 3,200,000 red blood cells and 4.2 Gm. of serum protein per hundred cubic centimeters. The operative findings were extensive carcinoma of the stomach with metastasis to the liver, diaphragm, aortic nodes and anterior abdominal wall. The operation was exploration and closure.

One can readily realize from the brief descriptions of the numerous possibilities of delay that these become the primary factor in the high mortality from gastric carcinoma. They all can be eliminated except perhaps the delay in the onset of symptoms; yet even that could be improved by doing a gastric roentgenogram in an annual check-up.

THE CHOICE OF OPERATION

It would not be just to cite the causes for the high mortality and the low survival group without pointing out one more important factor in reference to the surgeon. If a surgeon takes on himself the responsibility of doing a gastric operation for carcinoma he must be thorough in his surgical treatment. An extensive resection of the stomach should be done. Total gastrectomy is called for in many cases, and the surgeon should be trained to do this job, whether the approach is abdominal or transthoracic. The great, gastrohepatic and gastrocolic omenta should be removed. At times it is necessary to remove the spleen. I have used in selected cases the gastric pouch[9] after total gastrectomy, which has made the patients more comfortable. The surgeon must do a complete operation for gastric carcinoma, just as he would do a complete operation for carcinoma in any other location.

Our mortality from exploratory operation is 0.2 per cent. Subtotal gastrectomy results in a mortality of 2.8 per cent, and the mortality from total gastrectomy is 18 per cent. If any of the results are contrasted with the hundred per cent mortality from gastric carcinoma without operation certainly no choice is left.

HOW TO REDUCE PRESENT HIGH MORTALITY

What then should be the procedure in an attempt to reduce the present high mortality from gastric carcinoma? I believe that the answers are simple, and I should like to enumerate the possibilities. 1. There is the possibility of screening groups by gastric roentgenograms. 2. Every annual physical check-up should include a gastric roentgenogram. 3. Lay groups should be educated to see their physician early if they have gastric symptoms lasting two weeks or more, or if they are tired and have lost their appetite. 4. Gastric roentgenograms should be done at once for any patient complaining of fatigue with loss of appetite, and certainly if this is associated with indigestion. 5. Gastroscopic examination, fractional test meal, blood cell count and serum protein determinations are aids in diagnosis. (I have not mentioned the numerous studies which should be done if operation is contemplated.) 6. Any patient with a gastric lesion may be treated for four weeks, after which a second roentgenogram should be made. 7. Operation should be done in any case in which a diagnosis of gastric ulcer has been made and in which, after four weeks of medical treatment, the roentgenogram shows the ulcer to be still present, even though the patient is asymptomatic. 8. Operation should be done on any patient in whom a roentgenogram shows gastric carcinoma or in whom gastroscopy shows gastric carcinoma. 9. The operative procedure must be extensive.

9. Engel, G. C.: The Creation of a Gastric Pouch Following Total Gastrectomy, Surgery **17**: 512-523, 1945.

ABSTRACT OF DISCUSSION

DR. T. GRIER MILLER, Philadelphia: Dr. Engel has grouped the common causes for the high mortality in cancer of the stomach under the general heading of "delays": delay in diagnosis and delay in therapy. For the delay in diagnosis he has suggested a routine annual roentgenologic examination, but, irrespective of its value, I do not believe that for the population at large this is practical at present. I do believe with Dr. Engel that a prompt roentgenologic examination of the stomach and duodenum of every patient with any sort of digestive symptoms would at once bring about a dramatic reduction in the mortality. Furthermore, I think that initially this need be nothing more than a fluoroscopic examination. To accomplish even this, however, the survey would have to be made available at reasonable cost, the fluoroscopist would have to be expertly trained, and the public as well as the members of the medical profession would have to be persuaded of the importance of the procedure. Then we could reserve for the patients in whom something abnormal was found by the survey our more elaborate studies: gastric analysis, a search of the gastric sediment for cancer cells, roentgenograms, gastroscopy and special studies of the blood. None of these studies needs to be included in the survey. I know that Dr. Engel found in his series an 18-per cent error in the roentgen diagnosis, but probably many of those errors were in diagnosing lesions that were not present. In our own series of some years ago, less than 4 per cent of the eventually proved malignant lesions were completely missed by the roentgenologist, and even then some of the errors consisted in a diagnosis of ulcer, polyp or gastritis, all of these indicating further study. In a review of our last 156 cases of proved carcinoma made this last week by my associate, Dr. W. K. Shorley, it was found that in only 5 per cent was the malignant lesion not mentioned as a possibility, and in only 2.5 per cent was the stomach regarded as normal. Furthermore, in no case of carcinoma since 1942 has our roentgenologist failed to mention the diagnosis as a possibility. Indeed, on fluoroscopic examination alone, which we do routinely in our clinic, it has rarely happened that a suspicion was not aroused with respect to what later was proved to be a malignant lesion.

DR. ERIC A. ROYSTON, Los Angeles: This excellent paper has brought home to men doing general practice the importance of making an early diagnosis of carcinoma. One thing that we ought to note particularly is the excellent schematic way in which Dr. Engel presented his arguments.

DR. GILSON COLBY ENGEL, Philadelphia: Dr. Miller's figures of roentgen error of 5 per cent or less on the diagnosis of a gastric lesion are highly commendable. It is an excellent job. Our error was still 18 per cent. He gave me the way out by saying that maybe the 18 per cent error was in making the differential diagnosis, but our error for differential diagnosis was 34 per cent. It was mentioned that the development of anesthesiology and surgical technic has made possible the salvaging of many patients who formerly could not be salvaged. I would like to add one other phase to that, and that is determination of blood chemistry, which is highly important. I have not mentioned tests in the preparation of patients for operation, but I do want to mention chemistry as one of the big aids that have gone far to help us in saving patients' lives. I have been handed a question: "What is the cost at your clinic of this diagnostic roentgen study?" Twenty-five dollars.

NERVE LESIONS COMPLICATING CERTAIN CLOSED BONE INJURIES

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The infrequency of serious nerve injury as a complication of a closed fracture or dislocation adds to the anxiety with which these lesions are properly regarded. Even in a busy fracture service the incidence of grave nerve injury is so comparatively low (table 1) that there is barely sufficient material on which to base a firm policy. Everyone knows that spontaneous recovery occurs more often than not, but this is of no comfort to the patient or to the surgeon when, as sometimes happens, the paralysis fails to clear up. If a purely expectant policy is pursued the most favorable time for operative intervention will always be missed; on the other hand, routine exploration is unjustifiable.

I think it would be useful to give an account of observations made at the Oxford Peripheral Nerve Injuries Centre over a period of six years. Over 2,500 nerve injuries of every kind have been seen, and among them were a number of cases of nerve damage as a complication of closed injuries of the skeleton; these cases were referred on account of their great extent or their persistence. They were, therefore, a highly selected group, and this constitutes their chief value. I propose to deal only with certain important nerve injuries in the upper limb and, on the doubtful assumption that I live in a perfect world, shall say nothing about injuries due to badly applied plasters or operative trauma. However, I have included a few cases in which there was a superficial wound unconnected with the bone or nerve injury. In every case the significant damage was a closed injury.

There are three chief types of nerve injury (table 2). The comparatively transient paralysis that is called neurapraxia is familiar to everyone; the motor palsy is usually complete, whereas the sensory loss may be very slight; the most significant observation is the absence of reaction of degeneration in the muscles. Recovery is usually complete before the conclusion of treatment of the fracture. I propose to ignore these cases. Neurotmesis and axonotmesis are clinically indistinguishable, for in both there is a complete degenerative lesion. In neurotmesis the nerve is completely disorganized—it is often divided—and recovery never occurs in the absence of surgical repair. In axonotmesis, in which the Schwann tubes are preserved though the axons are ruptured, spontaneous recovery occurs with excellent restoration of function. The great problem is to know which of these types of damage is particularly associated with a particular bony injury or group of injuries.

In the cases under consideration a nerve may be injured by traction or by violence acting transverse to the length of the nerve (fig. 1). These two mechanisms are no doubt sometimes combined, but usually one type of injury predominates: from the practical point of view the distinction is important. In compression or severance by a bony spike one is dealing with a localized lesion, whereas the longitudinally acting traction produces damage over a great length of nerve and, although anatomic continuity may be preserved, the lesion is often essentially a neurotmesis on account of the extensive intraneural scar formation. In traction injuries the fracture may be incidental (fig. 2), as in most traction lesions of the brachial plexus, in which one sometimes finds a fracture of the cervical transverse processes or of the clavicle. Very rarely the fracture may be causative (fig. 3); that is to say, the traction lesion of the nerve cannot occur unless there is a fracture. I have seen only 2 such cases in the upper limb. In dislocations (fig. 4), especially of the shoulder and hip, the displacement of an articular surface is a causative factor in producing a traction lesion. In compression injuries or severance the mechanism is obvious; the broken bone itself damages the nerve. Clinically one may have some difficulty in distinguishing between a traction lesion and a direct injury, but there is one cardinal feature which is pathognomonic of a traction injury. If the extent of the paralysis indicates that

TABLE 1.—*The Incidence of Serious Nerve Injuries in Fractures of the Arm*

From the accident service, Radcliffe Infirmary, Oxford, England: Director, Mr. J. C. Scott

Humerus			
Fracture-dislocation of shoulder		6	One serious plexus lesion
Surgical neck		15	
Upper third	of shaft	9	One amputation for gross nerve and vascular injury
Middle third	of shaft	14	Three benign palsies, two of them transient
Lower third	of shaft	9	
Supracondylar		39	
External condyle		6	Two transient palsies
Internal condyle		4	
Summary			
Patients		100	
Fractures		102	
Serious nerve injuries		2	
Minor nerve injuries		5	

TABLE 2.—*Principal Types of Nerve Injury*

	Pathologic		
	Neurotmesis	Axonotmesis	Neurapraxia
Anatomic continuity	May be lost	Preserved	Preserved
Essential damage	Complete disorganization	Nerve fibers interrupted; Schwann sheaths preserved	Selective demyelination of larger fibers: no degeneration of axons
	Clinical		
Motor paralysis	Complete	Complete	Complete
Sensory paralysis	Complete	Complete	Usually much sparing
Sympathetic paralysis	Complete	Complete	Usually much sparing
Reaction of degeneration	Present	Present	Absent
Nerve conduction below lesion	Lost	Lost	Preserved
Muscle atrophy	Progressive	Progressive	Very little
	Recovery		
Surgical repair	Essential	Not necessary	Not necessary
Rate of recovery	1 to 2 mm. a day after repair	1 to 2 mm. a day	Rapid; days or weeks
March of recovery	According to order of innervation	According to order of innervation	No order
Quality	Always imperfect	Perfect	Perfect

From the Wingfield-Morris Orthopaedic Hospital, Nuffield Professor of Orthopaedic Surgery.

Read before the Section on Orthopedic Surgery at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1947.

the lesion of the nerve is proximal to the site of fracture then obviously a traction injury must have occurred. If in such a case the paralysis is complete the prognosis is uncertain, and if it persists the outlook is grave indeed. I am not altogether in despair about the treatment of severe traction lesions, but the subject is so difficult that I would prefer not to discuss it in this article.

Fig. 1.—Localized nerve lesion due to the fracture itself.

Figure 5 illustrates the site of bony injury in 79 cases of severe paralysis, and I propose to discuss the more important groups in turn. I have eliminated all the traction injuries in which it was clear that the bony injuries were incidental.

In 12 cases two or more nerve trunks were injured as a result of skeletal damage in the region of the shoulder. The type of bony injury appeared to be unimportant. In 5 cases there were fractures alone; in 2 there was dislocation of the shoulder; in 1 dislocation at the acromioclavicular joint, and in 4 there was a fracture-dislocation of the shoulder, the great tuberosity being involved in 3 cases and the surgical neck of the humerus in 1. In every case excellent recovery occurred. In retrospect it appears that the damage was chiefly an axonotmesis, and one can therefore conclude that however extensive the paralysis one may confidently give a good prognosis in any multiple nerve lesion in the region of the shoulder that is not due to traction. May I utter one word of warning; the conservative treatment must be carried out painstakingly and over a long period in order to avoid articular stiffness and muscular wasting—especially of the intrinsic muscles of the hand in cases in which the ulnar nerve is involved.

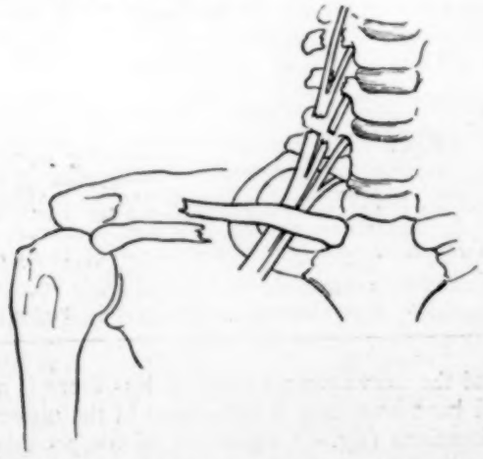

Fig. 2.—Nerve injury due to traction, in which bony damage is incidental.

When only one nerve trunk is involved—and in all except 1 case it was the circumflex—the prognosis is far less favorable. There were 16 cases of circumflex paralysis due to injury in the region of the shoulder, usually a dislocation with or without fracture of the great tuberosity. Are these injuries due to traction or to compression? On neurologic grounds it is impossible to say. From the mechanics of the injury one would suspect that the nerve is injured by traction, and this is fully borne out by the uncertainty of the prognosis. In only 7 cases was there good recovery; in 2 others it was imperfect. In 7 cases there was no recovery, though unfortunately in 4 of these the period of observation was limited to eight, nine, ten and fourteen months, respectively. However, in the cases in which good recovery occurred there were obvious signs of returning power before the end of eight months, which is what one would expect in view of the short distance that has to be traversed by regenerating axons. So I think that I am justified in regarding the paralysis as permanent in all the 7. In 2 cases exploratory operations have been performed. In both the nerve was in continuity; in 1 there was histologic evidence of a traction lesion, in the other no biopsy was performed, and the precise pathologic basis of the condition is unknown. The tentative conclusion is, therefore, that isolated circumflex nerve injuries are probably due to traction. The problem has not yet been tackled with sufficient boldness to offer an adequate remedy for those cases in which recovery does not occur spontaneously.

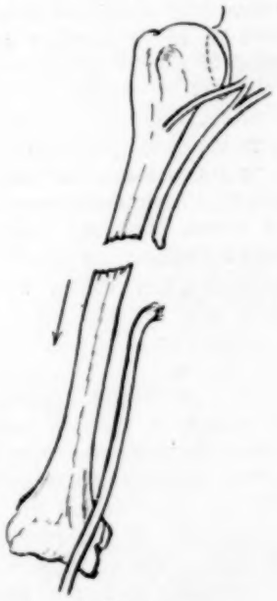

Fig. 3.

Fig. 4.

Fig. 3.—Nerve injury due to traction, the bony damage being causative: the nerve lesion could not occur in its absence.

Fig. 4.—Dislocation: nerve damaged mainly by stretching.

In 1 case the outer head of the median nerve alone was injured as a result of dislocation of the shoulder with fracture of the great tuberosity. Recovery was indifferent, and I am sorry now that an exploratory operation on the nerve was not performed, for one might then have had some clue to the nature of such a mysterious injury.

Fractures of the shaft of the humerus (fig. 7) most frequently involve the radial nerve. I have not yet seen a case in which there was an undoubted traction lesion; compression or division of the nerve by a bony fragment is the rule. There were 37 complete motor paralyses due to closed injury, and in 8 of them the nerve was divided. Preservation of touch and pain sensibility in the superficial radial area is often regarded as a sign that the nerve is in continuity. However, in

another series of 65 cases of division of the main trunk of the radial nerve, sensibility was preserved throughout the superficial radial area in 8; hence, although sensory sparing may still be regarded as evidence against division of the nerve, it is by no means conclusive. This is why I referred specifically to 37 cases of complete motor paralysis. The surprisingly high proportion of complete divisions, 8 of 37, does not present an altogether true picture of the incidence of such serious damage. In a number of cases there was a delay of some months before these cases came under observation; they were referred because complete paralysis was still present after treatment of the fracture had been completed. If one can make any sort of deduction from these data it is that if there is still complete paralysis when treatment of the fracture is over then there is —roughly—about a one in five chance of the nerve being completely divided. Must the lesion, then, be explored surgically in every case in order to find those in which suture of the nerve is imperative? The answer, as far as the radial nerve is concerned, is No. Provided that care is taken to maintain the mobility of joints and the volume of the paralyzed muscles by regular galvanic stimulation (both are necessary anyway) the surgeon is justified in waiting until the calendar tells him that the axons, growing down at a rate of 1 mm. a day, ought to have reached the most proximal muscle, brachioradialis, if spontaneous regeneration is in fact occurring (fig. 6). Suppose that the fracture is 12 cm. above the medial epicondyle. The point of entry into brachioradialis of its motor branch is about 2 cm. above the medial epicondyle. The regenerating axons must therefore travel a distance of at least 100 mm.

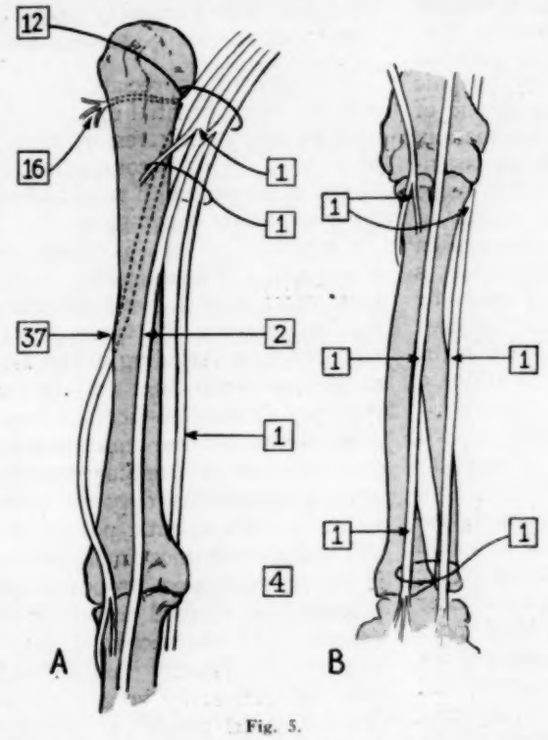

Fig. 5.

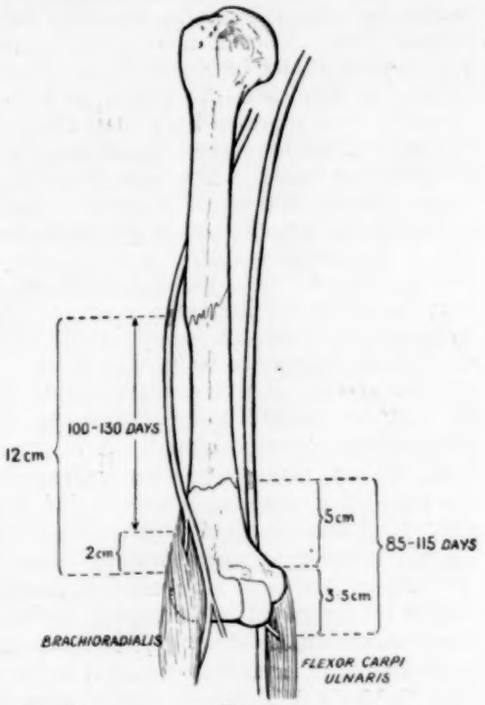

Fig. 6.

Fig. 5 *A* and *B*.—Sites of bone damage in 79 cases of severe nerve injury (neurotmesis or axonotmesis) in the upper limb.
Fig. 6.—Diagram illustrating calculation of the time that should be allowed before surgical exploration is considered.

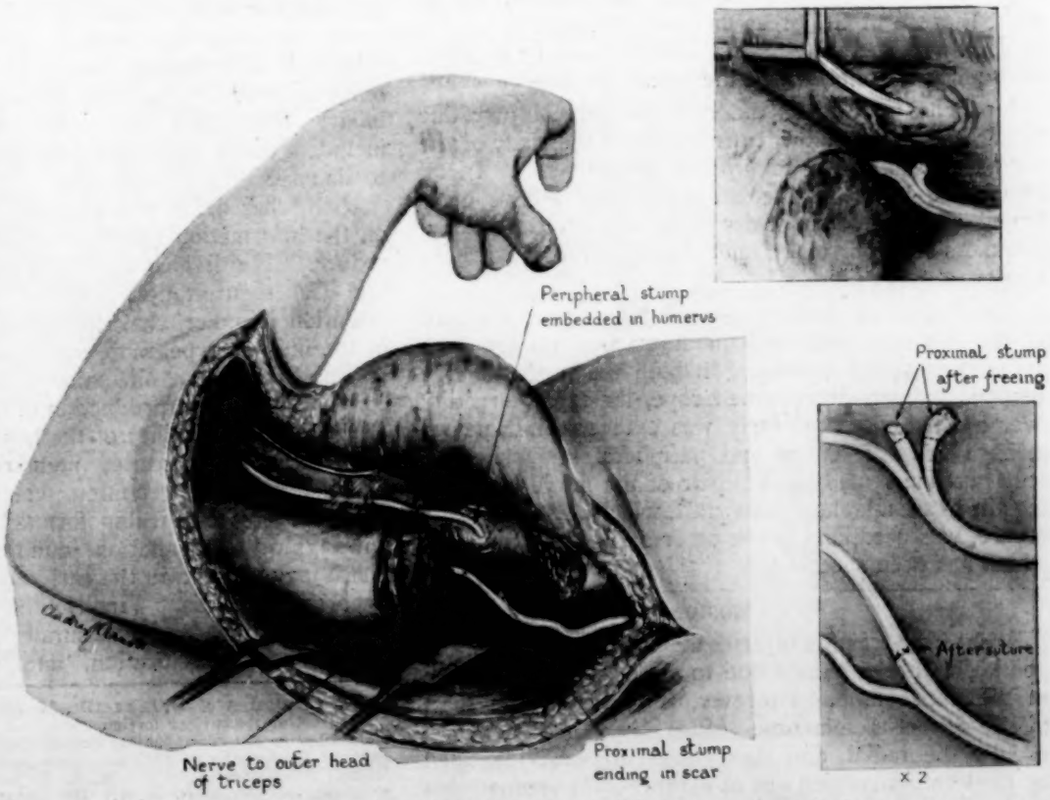
Peripheral stump embedded in humerus
Proximal stump after freeing
Nerve to outer head of triceps
Proximal stump ending in scar
After suture
× 2

Fig. 7.—Fracture of the humerus causing division of the radial nerve: resection and suture necessary.

before there can be effective reinnervation of this, the most proximal, muscle. No recovery can be expected in less than a hundred days, and one would be justified in waiting for say one hundred and thirty days, though hardly for longer, in order to allow for possible fortuitous delay. Then if there is no recovery a surgical exploration should be undertaken. Electromyographic study has furnished the physician with an index of recovery even more delicate than clinical examination. If regeneration is proceeding, motor unit action potentials will be found in the most proximal muscle some weeks before one could expect to find a flicker of voluntary power. If action potentials are absent then the indication to perform an exploratory operation is strong. At the time of operation one may find the nerve in continuity but perhaps tethered to the humerus by scar or even surrounded by callus. Provided that the consistency of the nerve is normal, which indicates a relative absence of intraneural scarring, it is justifiable to close the wound and perhaps wait a little longer, even though electrical stimulation of the nerve is negative, on the assumption that regeneration has been retarded by mechanical factors at the site of compression. But one must not wait too long, and if a second operation proves necessary it must be undertaken before the end of one year after injury; the prognosis after suture of the radial nerve rapidly worsens after more than twelve months' delay. The same rule applies in the treatment of other nerves damaged in the arm, provided that the lesion is fairly low. I have seen 2 such injuries, an ulnar divided by a low fracture of the shaft of the humerus and a median partially divided by a supracondylar fracture. However, if I came across a high ulnar or median lesion I should feel inclined not to wait, because of the great distance that has to be traversed by regenerating axons; if suture may be required the sooner it is performed the better.

I propose to dismiss the cases of nerve injury due to damage at the elbow, to fractures of the shaft of the radius and ulna and to injuries at the wrist. In all except the 1 case of median injury that I have mentioned, and another in which there was a little residual weakness of the posterior interosseous nerve, good spontaneus recovery occurred.

The 2 cases of median nerve injury due to fracture of the humerus and consequent traction on the limb are of surpassing interest. In both the median nerve snapped like an overstrained rope, its ends retracting over a great distance; there was extensive intraneural damage in both central and peripheral stumps. The only possible remedy was repair of the nerve by grafting; in 1 case a homogenous graft, which was a complete failure, was used, and in the other an autogenous graft, which has been successful.

CONCLUSION

Apart from traction injuries the prognosis is generally good after nerve lesions due to closed skeletal damage in the upper limb. However, fractures of the shaft of the humerus sometimes cause division of a nerve, usually the radial, and these cases are best identified by exploration carried out at a time when spontaneous regeneration is obviously overdue. Isolated circumflex nerve injuries are probably due to traction, and the prognosis is uncertain. Traction injuries directly due to fracture of a long bone are rare and of great gravity; they call for heroic operative treatment.

CONTRIBUTION OF THE LABORATORY TO THE DIFFERENTIAL DIAGNOSIS OF JAUNDICE

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In order to appreciate the value of the laboratory tests in the differential diagnosis of jaundice, it is necessary to check their results against the different types of icterus. This accounts for the need of a classification in keeping with recent advances in the knowledge of this important symptom.

Classification of jaundice has been repeatedly attempted, but I am going to discuss briefly only the four most widely used schemes. Van den Bergh [1] divided jaundice in two groups: (1) mechanical and (2) dynamic, including in the first all forms depending on biliary obstruction and in the second every other variety. This classification has the disadvantage of grouping under the same heading, dynamic jaundice, processes not only pathogenetically different but representing completely opposed problems from the diagnostic and therapeutic points of view.

Probably the most suitable for general clinical use is the classification proposed by McNee.[2] Cases of jaundice are divided according to it in three different groups: (1) obstructive hepatic jaundice, (2) toxic and infective hepatic jaundice and (3) hemolytic jaundice. It can easily be appreciated that this classification is based partly on pathogenesis and partly on etiology. Moreover, not all cases of icterus can be satisfactorily included under these three divisions.

Trying to make the terminology entirely one of pathogenesis, some authors [3] have named the second group hepatocellular instead of toxic and infective. Although this attempt means an improvement of the scheme, there are cases of jaundice not dependent on biliary obstruction or hemolysis which should be included under the second heading, yet are not due to damage of the liver cells.

Rich [4] based his classification on pathogenesis and on the information gained from certain laboratory procedures. He divided icterus in (1) retention jaundice and (2) regurgitation jaundice. According to Rich, retention jaundice, characterized by hyperbilirubinemia of the indirect type, increased urobilinogen in the feces and no bilirubin or bile salts in the urine, results as a combination of overproduction of bilirubin and decrease of the excretory ability of the hepatic cells. Nevertheless, there are cases of jaundice with the features of what Rich calls retention, which are not determined by an excess of bilirubin formation. Moreover, cases with typical regurgitation jaundice during their acute phase may present, in the early and late stages, indirect hyperbilirubinemia. Finally, the qualitative van den Bergh reaction is not accurate enough to form the basis for a classification, and sufficient experience

From Section A of Medicine (Dr. H. Alessandri) Hospital Salvador.
Address of the invited foreign guest read before the joint meeting of the Section on Internal Medicine and the Section on Experimental Medicine and Therapeutics at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1947.

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2. McNee, J. W.: Jaundice: A Review of Recent Work, Quart. J. Med. **16**: 390, 1923. Rolleston, H., and McNee, J. W.: Diseases of the Liver, Gallbladder and Bile Ducts, London, Macmillan & Co., 1929.
3. Bockus, H. L.: Gastroenterology, Philadelphia, W. B. Saunders Company, 1946, vol. 3.
4. Rich, A. R.: The Pathogenesis of the Forms of Jaundice, Bull. Johns Hopkins Hosp. **47**: 338, 1930.

regarding its quantitative expression [5] has not yet been accumulated.

Regurgitation jaundice is caused, according to Rich, by reflux of bile into the blood stream, and its laboratory features are positive prompt direct van den Bergh reaction, diminished output of urobilinogen in the feces and presence of bile pigments and bile salts in the urine. Besides what has already been said regarding indirect hyperbilirubinemia in certain cases of regurgitation jaundice, icterus due to incomplete biliary obstruction is temporarily accompanied by normal or elevated values of fecal urobilinogen. But the main drawback of Rich's classification is that it includes, under the same heading, regurgitation jaundice, those forms due to biliary obstruction and those caused by parenchymal liver damage; this complicates not only its theoretic understanding but also its practical application. In clinical medicine there is a need for distinction between these two forms of jaundice, as they represent entirely different diagnostic and therapeutic problems. Moreover, their laboratory pictures, considered as a whole, with opposite results in many of the tests usually employed, demand their individualization.

Finally, one must consider the classification recently proposed by Varela-Fuentes.[6] He differentiates: (1) jaundice due to hyperhemolysis and (2) jaundice due to intercommunication of bile and blood; these two groups correspond in fact to those of van den Bergh's and Rich's classifications. It has already been said that some cases of icterus, apparently hemolytic, are not caused by hyperdestruction of blood. It is also inconvenient from the theoretic and practical points of view to place in the same group jaundice produced by parenchymal injury of the liver and that due to obstruction of the bile flow.

Nevertheless, Varela-Fuentes' classification is the one more in accordance with recent knowledge. According to it, jaundice due to intercommunication of bile and blood is divided in (*a*) subhepatic and (*b*) intrahepatic jaundice; that is to say, in obstructive and nonobstructive jaundice. It has also the merit of introducing the concept of intrahepatic jaundice not due to hepatocellular damage. This classification has the inconvenience of introducing ill defined terms like "hepatosis" and "peri-hepatocitic."

In an effort to obviate the disadvantages of these different classifications, the following one has been proposed.[7] It has been devised to permit the grouping of cases of jaundice in a way allowing a rapid pathogenetic, diagnostic and therapeutic differentiation. It is mainly based on the stage at which bilirubin is accumulated during the process of excretion, whether within the liver or the extrahepatic biliary tract (posthepatic). In the former case, it differentiates those instances in which bilirubin has been converted to the prompt reacting type (hepatic) or is still delayed or indirect reacting (prehepatic).

Prehepatic jaundice has no demonstrable anatomic lesion in the liver. It may be due; (1) to production of bilirubin at a rate greater than that at which the normal hepatic cells can metabolize or excrete it or (2) to probable rising of the threshold for excretion of bilirubin and accumulation of pigment in the blood stream.

Prehepatic jaundice is characterized by hyperbilirubinemia with negative prompt van den Bergh reaction or, rather, with a low value for prompt direct reacting bilirubin.

The clinical picture of hemolytic prehepatic jaundice is sufficiently known, and it is not necessary to dwell on it.

Prehepatic jaundice not due to overdestruction of blood has received varied designations, according to different authors. Gilbert [8] named it "familial cholemia"; Meulengracht,[9] "icterus intermittens juvenilis"; Rozendaal and Comfort,[10] "constitutional hepatic dysfunction"; Dameshek and Singer,[11] "familial nonhemolytic jaundice," and Alwall and colleagues,[12] "hereditary, non-hemolytic bilirubinemia." The designation nonhemolytic prehepatic jaundice permits the understanding of the essential features of this picture without giving rise to confusion. The important thing to remember is that one is dealing with a hyperbilirubinemia not derived from increased destruction of blood and that hepatic function tests and histologic examinations show no abnormality. Evidence for this last point has been obtained from the work of Krarup and Roholm [13] and of Alwall.[14]

Hepatic jaundice is determined by injury or disease of the liver itself. It is necessary to consider separately (1) those cases in which the histologic examination reveals changes in the hepatic cells and (2) those in which the bile canaliculi appear to be the site of the injury and the hepatic cells are relatively normal.

Classification of Jaundice

Prehepatic	Hemolytic Nonhemolytic
Hepatic	Hepatocellular Hepatocanalicular
Posthepatic	Complete obstructive Incomplete obstructive

This differentiation is of utmost importance, as it has been definitely established that some cases of jaundice originating in the liver itself do not show evidence of hepatic dysfunction. Moreover, some of these cases have all the features of obstructive jaundice. These characteristics have not only been demonstrated for cases of jaundice following the therapeutic use of arsenicals,[15] sulfonamide drugs [16] and thiouracil,[17] but

5. Ducci, H., and Watson, C. J.: The Quantitative Determination of the Serum Bilirubin with Special Reference to the Prompt Reacting and the Chloroform Soluble Types, J. Lab. & Clin. Med. **30**: 293, 1945.

6. Varela-Fuentes, B.: Las ictericias de origen intrahepático, Prensa méd. argent. **30**: 2091, 1943.

7. Ducci, H.: Sobre clasificación de las ictericias, Rev. méd. de Chile **74**: 799, 1946.

8. Gilbert, A.: Clinique médicale de l'Hôtel Dieu de Paris, Paris, J.-B. Baillière & fils, 1913.

9. Meulengracht, E.: Icterus intermittens juvenilis (Chronischer intermittierender juveniler Subikterus), Klin. Wchnschr. **18**: 118, 1939.

10. Rozendaal, H. M.; Comfort, M. W., and Snell, A. M.: Slight and Latent Jaundice: The Significance of Elevated Concentrations of Bilirubin Giving an Indirect van den Bergh Reaction, J. A. M. A. **104**: 374 (Feb. 2) 1935. Comfort, M. W., and Hoyne, R. M.: Constitutional Hepatic Dysfunction: Clinical Study of Thirty-Five Cases, Gastroenterology **3**: 155, 1944.

11. Dameshek, W., and Singer, K.: Familial Nonhemolytic Jaundice: Constitutional Hepatic Dysfunction with Indirect van den Bergh Reaction, Arch. Int. Med. **67**: 259 (Feb.) 1941.

12. Alwall, N.; Laurell, C. B., and Nilsby, I.: Studies on Heredity in Cases of "Non-Hemolytic Bilirubinemia Without Direct van den Bergh Reaction" (Hereditary Nonhemolytic Bilirubinemia), Acta med. Scandinav. **124**: 114, 1946.

13. Krarup, N. B., and Roholm, K.: Leberbiopsie bei Icterus intermittens juvenilis, Klin. Wchnschr. **20**: 193, 1941; Histologiske undersøgelser med leverbiopsi ved ikterus intermittens juvenilis, Ugesk. f. læger **103**: 72, 1941.

14. Alwall, N.: On Hereditary, Non-Hemolytic Bilirubinemia, Acta med. Scandinav. **123**: 560, 1946.

15. (*a*) Hanger, F. M., Jr., and Gutman, A. B.: Postarsphenamine Jaundice Apparently Due to Obstruction of Intrahepatic Biliary Tract, J. A. M. A. **115**: 263 (July 27) 1940. (*b*) Alessandri, H., and Ducci, H.: Modalidades evolutivas y de laboratorio de las ictericias interarsenoterapéuticas precoces, Rev. méd. de Chile **70**: 673, 1942.

16. Ducci, H., and Echenique, E.: Ictericia por sulfadiazina, Rev. méd. de Chile **74**: 55, 1946.

17. Gargill, S. L., and Lesses, M. F.: Toxic Reactions to Thiouracil: Report of Cases with One Fatality, J. A. M. A. **127**: 890 (April 7) 1945.

also for others that clinically must be considered as infectious hepatitis.[18]

The knowledge of this type of jaundice has created the expression "intrahepatic obstruction" which unfortunately is apt to originate misunderstandings.[19] Some authors[20] consider broadly as intrahepatic obstructive jaundice all cases with prolonged chemical acholia or with normal values of urobilinogen in the urine for a certain period and in which an extrahepatic obstruction can be ruled out. Nevertheless, it has to be remembered that these features are sometimes observed in cases of jaundice due to parenchymal liver damage, in which there is no histologic evidence of obstruction.

The name hepatocellular jaundice must be applied to those cases originating in the liver itself and accompanied by signs of hepatic dysfunction and histologic lesion of the parenchymal cells. The designation hepatocanalicular jaundice belongs to those cases also originating in the liver itself, but with the bile canaliculi as the site of the lesion and with normal or almost normal results of hepatic function tests.

Posthepatic or mechanical jaundice may be due to complete or incomplete obstruction of the bile ducts. Its mechanism and features are well known, and it is unnecessary to dwell on them.

From Jan. 1, 1938, to Nov. 15, 1946, it has been possible to study the behavior of certain laboratory tests in 1,770 cases of jaundice of different causation. Cases that according to the classification presented can be grouped as follows:

Hemolytic prehepatic jaundice	37
Nonhemolytic prehepatic jaundice	6
Hepatocellular jaundice	1,368
Hepatocanalicular jaundice	52
Posthepatic jaundice	307

At the present time, a group of tests has been adopted for routine use. These tests, besides being relatively simple, give ample information of the problem with which co-workers and I are dealing. It has been necessary to eliminate some of real value, like the galactose tolerance test, as it has certain economic and technical disadvantages. The analysis of the data obtained with the laboratory tests in these cases of jaundice, from a statistical point of view, has been the subject of previous communications.[21]

It must be realized that the laboratory study of jaundiced patients is a valuable help to the clinician only if carefully interpreted with a knowledge of the different pathologic pictures, as well as of the normal and abnormal values of the tests, and of the changes they may suffer during the course of the disease. In this, as in other fields of medicine, the laboratory cannot make diagnosis or establish therapeutic rules. Only the physician knowing the clinical and laboratory features of cases of jaundice is able to correlate the chemical tests with the clinical findings and to appreciate the real help that may be derived from the laboratory.

The tests adopted for routine use in jaundice patients and their normal values are as follows:

Total serum bilirubin (Malloy and Evelyn[22]), up to 1 mg./ 100 cc.
Prompt direct reacting bilirubin (Ducci and Watson[5]), up to 0.2 mg./100 cc.
Total serum cholesterol (Bloor[23]), 140-180 mg./100 cc.
Serum phosphatase (Alessandri and Ducci[21c]), 1-4 units
Cephalin-cholesterol flocculation test (Hanger[24]), 0 or +
Colloidal gold test (Maclagan[25]), 0
Thymol turbidity test (Maclagan[26]; Ducci[27]), up to 4 units
Colloidal red test (Ducci[28]), 0
Urine Ehrlich reaction (Watson and others[29]), up to 1.2 units[30]
Feces Ehrlich reaction (Watson and others[29]), 50-200 units[30]

In the following pages, the results of these laboratory tests in the different types of jaundice are given.

NONHEMOLYTIC PREHEPATIC JAUNDICE

In nonhemolytic prehepatic jaundice there are: hyperbilirubinemia of the indirect type (negative direct van den Bergh reaction or prompt direct reacting bilirubin below 40 per cent); a normal splenic shadow; absence of anemia and of microspherocytosis; normal "rouleaux" formation; normal erythrocyte fragility; normal duodenal drainage; normal urobilinogen in feces and urine; absence of bone marrow hyperplasia; normal hepatic function reactions; absence of bile pigments and bile salts in the urine, and abnormal bilirubin excretion reaction (?). Regarding this last point, normal results have been obtained with the bilirubin excretion test in the cases of nonhemolytic prehepatic jaundice studied by us.[21d] Moreover, Neefe[31] has observed widely varying responses in a group of apparently normal persons subjected at frequent intervals to this investigation. It appears then that Dameshek and Singer's[11] interpretation of their abnormal results must be taken with caution.

HEMOLYTIC PREHEPATIC JAUNDICE

In hemolytic prehepatic jaundice there are: an enlarged splenic shadow; anemia of variable degree with microspherocytosis, frank reticulocytosis and abnormal "rouleaux" formation; erythrocyte fragility generally increased; hyperbilirubinemia of the indirect type (negative prompt van den Bergh reaction or prompt direct reacting bilirubin below 40 per cent);

18. Watson, C. J., and Hoffbauer, F. W.: The Problem of Prolonged Hepatitis with Particular Reference to the Cholangiolitic Type and to the Development of Cholangiolitic Cirrhosis of the Liver, Ann. Int. Med. **25**: 195, 1946.
19. Lichtman, S. S.: Diseases of the Liver, Gallbladder and Ducts, Philadelphia, Lea & Febiger, 1942.
20. Steigmann, F., and Popper, H.: Intrahepatic Obstructive Jaundice, Gastroenterology **1**: 645, 1943.
21. (*a*) Alessandri and Ducci.[19b] (*b*) Alessandri, H.; Ducci, H., and Roeschmann, W.: Contribucion del laboratorio al diagnóstico diferencial de las ictericias, Rev. méd. de Chile **75**: 151, 1947. (*c*) Alessandri, H., and Ducci, H.: Diagnóstico diferencial de los cuadros ictéricas; estudio comparativo de la dosificación de colesterol total, la determinación de fosfatasas, la prueba del benzoato de sodio y la floculación cefalina-colesterol, ibid. **71**: 1150, 1943. (*d*) Ducci, H.; Etcheverry R.; Nijamkin, A., and Zanartu, J.: Ictericias familiares hemolitica y no hemolitica, ibid. **71**: 837, 1943.
22. Malloy, H. T., and Evelyn, H.: The Determination of Bilirubin with the Photoelectric Colorimeter, J. Biol. Chem. **119**: 481, 1937.
23. Bloor, W. R.: Determination of Cholesterol in Blood, J. Biol. Chem. **24**: 227, 1916.
24. Hanger, F. M.: Serological Differentiation of Obstructive from Hepatogenous Jaundice by Flocculation of Cephalin-Cholesterol Emulsions, J. Clin. Investigation **18**: 261, 1939.
25. Maclagan, N. F.: The Serum Colloidal Gold Reaction as a Liver Function Test, Brit. J. Exper. Path. **25**: 15, 1944.
26. Maclagan, N. F.: The Thymol Turbidity Test as an Indicator of Liver Dysfunction, Brit. J. Exper. Path. **25**: 234, 1944.
27. Ducci, H.: The Thymol Test of Maclagan: Standardization and Adaptation to the Evelyn Photoelectric Colorimeter, J. Lab. & Clin. Med., to be published.
28. Ducci, H.: La reacción del rojo coloidal y la adaptación al colorimetro fotoeléctrico de la reacción de enturbiamiento al timol de Maclagan (comunicación preliminar), Rev. méd. de Chile **74**: 773, 1946.
29. Watson, C. J.; Schwartz, D.; Sborov, V., and Bertie, E.: Studies of Urobilinogen: V. A Simple Method for the Quantitative Recording of the Ehrlich Reaction as Carried Out with Urine and Feces, Am. J. Clin. Path. **14**: 605, 1944.
30. Ducci, H.: El método simplificado de Watson para el estudio del urobilinógeno fecal y urinario, Rev. méd. de Chile **74**: 445, 1946.
31. Neefe, J. R.: Recent Advances in the Knowledge of "Virus Hepatitis," Med. Clin. North America **30**: 1407, 1946.

hyperconcentration of bile obtained by duodenal drainage; increased urobilinogen in the feces and normal or increased uribilinogen in the urine; normoblastic hyperplasia of the bone marrow; normal or only slightly abnormal hepatic function reactions, and absence of bile pigments and bile salts in the urine.

The differential diagnosis between the two types of prehepatic jaundice is very important, as it has therapeutic implications. Sometimes it is possible only with the help of the laboratory studies.

DIFFERENTIAL DIAGNOSIS

Before considering the other types of jaundice, it is important to place the laboratory tests in three groups according to their importance in special problems of the differential diagnosis. Gutman and Hanger [32] have used a similar distinction.

Tests for Hepatocellular Jaundice.—Tests for hepatocellular jaundice afford evidence of it when their results are positive, as they are indicative of parenchymal injury. The flocculation reactions are the more frequently used, as they are easy to perform and require only a minimum amount of serum. These are: the cephalin-cholesterol flocculation test, the colloidal gold test, the thymol test and the colloidal red test. The hippuric acid test is too variable and sensitive to be used in the differential diagnosis of jaundice.[21e]

Tests for Posthepatic Jaundice.—Tests for posthepatic jaundice afford evidence of it when they are positive, that is to say, when their values are greater than certain empiric limits: when the total serum cholesterol is over 200 mg. per hundred cubic centimeters and the serum alkaline phosphatase is over 10 units.

Tests for the Patency of the Biliary Tract.—Those tests indicate the amount of bile entering the intestinal tract and for this reason are not specific for obstruction of the bile ducts; in hepatocellular jaundice little or no bile may reach the duodenum because its excretion is impaired. Nevertheless, when correctly interpreted the tests of the patency of the biliary tract are the only means by which the complete or incomplete character of a case of posthepatic jaundice can be determined. They are determination of urobilinogen in the feces and duodenal drainage.

The values for urobilinogen in the urine may serve as an indirect index of biliary obstruction. When there is acholia, it cannot be formed and is not then excreted in the urine.

HEPATOCELLULAR JAUNDICE

In hepatocellular jaundice there are hyperbilirubinemia of the direct type (positive prompt direct van den Bergh reaction or prompt direct reacting bilirubin over 50 per cent); hypoconcentration of bile or acholia (seldom lasting over seven days) obtained by duodenal drainage in the acute phase and hyperconcentration of A bile during recovery; absence of urobilinogen in the feces (seldom lasting over seven days) or low values during the acute phase and gradual increase, even above normal, during recovery; pathologic values for urine urobilinogen except when little or no bile reaches the duodenum; bile pigments and bile salts in the urine; positive reactions for hepatocellular jaundice, and negative reactions for posthepatic jaundice.

In hepatocellular jaundice the total serum cholesterol concentration, low in the acute phase, may increase even above normal during recovery. The values of urobilinogen in the urine and feces follow a typical and well known course.[30]

It has to be remembered that some cases of cirrhosis with jaundice show a greatly increased phosphatase activity, the mechanism of which appears unexplained.

HEPATOCANALICULAR JAUNDICE

In hepatocanalicular jaundice there are hyperbilirubinemia of the direct type; hypoconcentration of bile or acholia for a long period, obtained by duodenal drainage; very low values for urobilinogen in the feces for a long period; normal values for urobilinogen in the urine when little or no bile is reaching the duodenum; bile pigments and bile salts in the urine; negative reactions for hepatocellular jaundice; positive reactions for posthepatic jaundice; undamaged parenchymal cells, periportal infiltration, and no evidence at biopsy of retention of bile.

Certain cases represent a transition between hepatocellular and hepatocanalicular icterus, with certain indications for hepatocellular jaundice and others for posthepatic jaundice. In these cases, differential diagnosis is difficult, and sometimes the correct conclusion is reached only after a maintained and serialized study and with the help of some accessory procedures like biopsy or peritoneoscopy.

INCOMPLETE OBSTRUCTIVE POSTHEPATIC JAUNDICE

In incomplete obstructive posthepatic jaundice there are: hyperbilirubinemia of the direct type (prompt direct reacting bilirubin generally over 60 per cent); large amounts of hyperconcentrated A bile obtained by duodenal drainage (paradoxical syndrome); fluctuating values for urobilinogen in the feces, from very low to above normal; generally abnormal values for urobilinogen in the urine, when enough bile reaches the duodenum; bile pigments and bile salts in the urine; negative reactions for hepatocellular jaundice, and positive reactions for posthepatic jaundice.

In this type of posthepatic jaundice, the hyperbilirubinemia is generally fluctuating, as the obstructive mechanism has valvular features. This also accounts for the finding of the "paradoxical syndrome," [33] the name of which is derived from the fact that in a case with posthepatic features, instead of acholia, a large amount of hyperconcentrated A bile is obtained in the duodenal drainage; the bile retained behind the obstruction is released by the stimulus produced by the tube in the duodenum. This bile is hyperconcentrated due to loss of water. The fluctuating values for urobilinogen in the feces depend on the same mechanism that explains the changing hyperbilirubinemia.

The pathologic values for urobilinogen in the urine frequently encountered in incomplete obstructive posthepatic jaundice correspond to the hepatic damage generally present in these patients as a result of long-standing biliary disease.

32. Gutman, A. B., and Hanger, F. M., Jr.: Differential Diagnosis of Jaundice by Combined Serum Phosphatase Determination and Cephalin Flocculation Test, Med. Clin. North America **25**: 837, 1941.

33. Alessandri, H.; García, P.; Ducci, H., and Saldías, R.: El sondaje duodenal en el diagnóstico de las ictericias; el síndroma paradojal, Rev. méd. de Chile **78**: 277, 1940.

It has to be borne in mind that when fever is present the total cholesterol serum concentration may be at or below normal values.

COMPLETE OBSTRUCTIVE POSTHEPATIC JAUNDICE

In complete obstructive posthepatic jaundice there are: hyperbilirubinemia of the direct type (prompt direct reacting bilirubin generally over 70 per cent); sustained acholia and occasional hemorrhage observed by duodenal drainage; absence of urobilinogen in the feces for a long period; low values for urobilinogen in the urine; large amounts of bile pigments and bile salts in the urine; negative reactions for hepatocellular jaundice, and positive reactions for posthepatic jaundice.

The sustained duodenal and fecal acholia is characteristic of complete obstructive posthepatic jaundice. Occasionally, the duodenal fluid is more or less blood stained; if general hemorrhagic tendency like that produced by marked hypoprothrombinemia can be ruled out, this is indicative of involvement of the ampulla of Vater by a malignant growth.

Phosphatase activity is at very high values in this type of jaundice.

Hypoprothrombinemia and its response to parenteral administration of synthetic vitamin K have not been considered in this discussion. Nevertheless, it seems worth while to mention that in complete obstructive posthepatic jaundice the most dramatic responses are observed, even with very low basal values.

PROBLEMS OF THE DIFFERENTIAL DIAGNOSIS

It is necessary to insist on certain points that contribute to a better understanding and evaluation of the laboratory results in the differential diagnosis of jaundice.

Prehepatic jaundice is characterized by the constant indirect type of hyperbilirubinemia and lack of bilirubinuria. Hepatocellular jaundice may have in its early and late phases indirect qualitative hyperbilirubinemia; nevertheless, in these cases there is almost always present an increase of prompt direct reacting bilirubin which is lacking in prehepatic jaundice.

Once the existence of prehepatic jaundice has been determined, it is necessary to establish its hemolytic or nonhemolytic nature. This is based on the presence or absence of direct and indirect signs of increased blood destruction.

In the presence of hepatocellular jaundice, it is important to know its etiology (infectious hepatitis, homologous serum jaundice, cirrhosis, etc.). Peritoneoscopy and liver biopsy may be helpful, and also some accessory procedures like the Takata-Ara [34] and Gros [35] tests, which elicit intensely positive reactions in alcoholic cirrhosis.

Hepatocanalicular jaundice may simulate the whole picture of complete obstructive posthepatic icterus. This type of jaundice generally follows the therapeutic use of arsenicals,[15] sulfonamide drugs [16] or thiouracil,[17] which renders past history very important. In most cases, it is observed in relatively young persons who are more often exposed to the diseases needing these therapeutic measures (especially regarding antisyphilitic arsenotherapy); this is opposed to complete obstructive posthepatic jaundice, characteristic of cancerous growths, commoner in older persons.

Certain cases with features of hepatocanalicular jaundice are not related to the therapeutic use of drugs and thus present a more complicated problem. Sometimes, when the course of the disease has been prolonged or remissions have occurred, cirrhosis may have developed, which, though accompanied by jaundice with posthepatic features, can easily be recognized by means of biopsy or peritoneoscopy.[36]

Neefe [31] has recently called attention to the fact that certain tests for hepatocellular jaundice, like the colloidal gold and thymol tests, elicit less positive reactions in homologous serum jaundice than in epidemic infectious hepatitis. We have observed similar results, using other tests, in late postarsphenamine jaundice, which may be considered as homologous serum icterus.[15b]

Regarding the tests for hepatocellular jaundice, they may elicit negative reactions in the early phases of this type of icterus and positive in posthepatic jaundice of long standing, due to superimposed hepatic damage. These tests are most helpful when the reactions are positive in the first days of jaundice and when negative in a protracted case; they indicate hepatocellular jaundice in the first situation and posthepatic in the second.

The tests for posthepatic jaundice may be negative in result in this type of icterus when the obstruction is intermittent or of a very low grade; they may be positive in cirrhosis and early phases of infectious hepatitis. These tests are most helpful when the reactions are negative in a case with deep jaundice, affording then strong evidence for hepatocellular icterus.

The combined results of both groups of tests, when they afford complementary evidence of the same type of jaundice, are of utmost value.

Once the posthepatic character of a case of jaundice has been established, it is necessary to determine by means of the tests for the patency of the biliary tract whether the obstruction is complete or incomplete. In the great majority of cases, incomplete obstructive posthepatic jaundice is due to a benign process (stone in the common duct, benign stricture, etc.). Only 2 of our 135 cases of choledocolithiasis in which the diagnosis was confirmed, showed acholia, and this was of a transient nature.

Complete obstructive posthepatic jaundice is almost always due to a malignant growth (cancer of the head of the pancreas, the biliary tract or the duodenum). In only 4 of our 76 cases of cancerous icterus in which the diagnosis was proved, the obstruction was incomplete; 3 of these were primary carcinoma of the common duct and the fourth a duodenal cancer.

In some cases, the laboratory findings have rendered possible the correct diagnosis of posthepatic jaundice, even when the bedside manifestations strongly suggested an hepatocellular type of icterus. These patients have been admitted with a picture like the one seen in acute yellow atrophy: deep jaundice, nervous symptoms and hemorrhagic tendency (so-called icterus gravis), but the laboratory tests have afforded complementary evidence of obstruction of the biliary tract. Postmortem examination has confirmed the latter in 9 such cases.

34. Alessandri, H., and Ducci, H.: La reacción de Takata-Ara en las enfermedades hépatobiliares, Rev. méd. de Chile **70**: 263, 1942.
35. Ducci, H., and Roeschmann, W.: La reacción de Gros en las enfermedades hépatobiliares, to be published.
36. Ducci, H., and Barahona, R.: Consideraciones sobre cirrosis juveniles, Rev. méd. de Chile **74**: 708, 1946.

PSYCHIATRIC CONTRIBUTIONS TO CARE OF TUBERCULOUS PATIENTS

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It has been said that each generation must carefully sift those new ideas which their contemporaries bring forth, save the good and discard the bad. The rehabilitation of the tuberculous is not new but a carry-over from the very beginnings of the sanatorium movement. However, the successful planning and accomplishment of this purpose has not been seen up to this date. We have carried down the idea of rehabilitation but have learned little from past experience. Dettweiler [1] once said that the successful cure of tuberculosis depended both on the character and on the pocketbook. Though many eminent physicians have stressed character in terms of the psychologic aspects of the disease, most attention has been paid the pocketbook or economic security.

The ideal of sending the person with arrested tuberculosis back to his community as an independent citizen has been applied over these past fifty years by means of graduated exercise, work activity and the creation of farm colonies, industrial settlements, sheltered workshops and even special employment bureaus. With the tremendous problem of the numerous tuberculous veterans at the close of World War I, plans were made for rehabilitation on a large scale. The many shops opened for retraining such veterans closed, one after another. It was not a failure of intention, but a failure of means and personnel. Again we are faced with a problem of the tuberculous veteran, and again interest is centered on rehabilitation. The question immediately presents itself: Is hardening and retraining enough to keep the tuberculous patient from breaking down again? Is economic security the answer alone?

It is readily understood that the handling of the tuberculous patient poses special problems engendered both by the chronicity and character of his illness and by the rejection which he suffers from those close to him. Most tuberculous patients must reorient their lives to meet the hazards and consequences of their disease. This applies not only to necessary vocational adjustments but even more forcibly to the personal ties which form the fabric of living. Every effort is made to divert the patient's thought into more pleasant channels through the use of books, radio, motion pictures, cheerful surroundings and other artificial means. All of these are useful and undoubtedly important, but little more than lip service has been paid to the more important aspect; the patient's reactions and feeling; i. e., the total personality. It is to emphasize this most important and all-embracing aspect of rehabilitation that this paper is presented.

"Rehabilitation in tuberculosis is the restoration of the tuberculous persons to the fullest physical, mental, social, vocational, and economic usefulness of which they are capable." This is the most recent definition accepted at the Washington Rehabilitation Conference held in April 1946.

More important than the definition itself is the problem of when such a rehabilitation program should start. In relation to the psychiatric patient, Karl Menninger [2] has stated that rehabilitation begins at the gate of the hospital and is a continuing process thereafter.

In regard to the tuberculous, many workers have felt that preparation of the patient for hospitalization is of fundamental importance in good treatment, and that rehabilitation should, therefore, begin with the diagnosis. With such reasoning, it is difficult to see that rehabilitation, as defined in a preceding paragraph, is anything more or less than comprehensive medicine, practiced on the broadest possible scale. As the art of medicine has matured, the physician has accepted the total responsibility, not only for curing the physical and mental ills of his patient, but of putting him back into the community, a useful citizen again.

This growing up process of medicine has brought with it many adjunct professions to which the physician has had to delegate some of the many responsibilities of a total medical program. Social service, occupational therapy, vocational counseling, psychology, and numerous others have all shared and are having an increasing part in this comprehensive program of medical care. The ability of the physician to delegate such responsibilities and to maintain an over-all supervisory attitude must be based on a complete knowledge of the function and duties of these many useful medical adjuncts, as well as an acceptance of their professional competence.

Instead of referring, then, to rehabilitation in the future, let us rather think of this as a comprehensive medical program, which involves all the workers in the field, acting under the guidance of the physician, geared to care for the patient throughout the long period of his illness and his restoration to full usefulness.

Comprehensive medicine, particularly as applied to a chronic illness such as tuberculosis, should include: (1) orientation of the patient to his illness; (2) evaluation of organic and psychologic factors and their interaction; (3) a plan of treatment to include organic and psychosocial factors, and (4) a phase of social readaptation, with regard for psychosocial as well as organic limitations.

No sharp lines can be drawn between any of these phases; they are overlapping, interlocking and interdependent. In a chronic, recrudescent disease such as tuberculosis, it is especially important to be aware of the patient's attitudes and conflicts and to understand that his emotional reactions to the illness, his acceptance or rejection of the disease and his fears and misapprehensions may all play a decisive role in modifying his physical course and prognosis. The patient's initial reactions to his illness begin to harden quickly into a pattern which influences all later attitudes and reactions, and early orientation, designed to relieve fear of the physical effects of the illness, fear of rejection because of the illness, and the fear of the threats of the illness to established personality compensations and defenses, is a basic medical responsibility. Some aspects of tuberculosis in which personality problems are prominent will now be presented.

Read at the Annual Meeting of the Colorado Tuberculosis Association, Denver, Feb. 18, 1947.

From the National Jewish Hospital at Denver, the Colorado Psychopathic Hospital and the Departments of Medicine and Psychiatry, University of Colorado School of Medicine.

1. Dettweiler, cited by Pottenger, F. M.: How May the Tuberculous Patient Secure an Arrestment of His Disease Without Becoming an Invalid? Proc. Nat. Tuber. A., 1920, p. 139.

2. Menninger, K. A.: Mental Patients Predominate Here, Hospitals 20: 44, 1946.

The diagnosis of tuberculosis almost invariably brings with it changes in the emotional, social, and economic life of the patient. While the long range implications are probably not immediately recognized, the dreaded word "tuberculosis" may produce a "psychologic black-out" in which the patient is incapable of understanding or even hearing anything that follows. In some clinics it is customary to permit a "cooling-off" period. Here patients are permitted to sit and recover before further discussion is attempted. It is frequently noted that the patient has only a vague memory of any explanation offered to elaborate the diagnosis. Various reactions are then noted. Sometimes there is dull apathy which persists for weeks or months; a more active response with more expression of feeling, such as weeping or agitation, may be safer than a "walling-off" reaction. Blustering denial of the serious significance of the illness is often most difficult to handle, and incalculable physical destruction and breakdown of personality may ensue before fuller awareness is reached. Still other patients respond to explanations with anger and rejection, which may be a way of fighting off feelings of guilt; i. e., that the breakdown is a result of one's own inadequacy or a punishment for some real or fantasied wrong doing. There is sometimes a conflict, as well, about accepting the dependency which "curing" necessitates. Other patients direct their anger against a suspected source of contagion, usually a member of their family, toward whom they have other reasons to feel resentful.

Fearing that the diagnosis may be too much for the patient, and in the hope of softening the blow, the physician may speak of a "spot" on the lung. Such a euphemism is actually harmful to most patients since it not only is usually an understatement but is also misleading. Any procedure that tends to interfere with realistic planning for future cure is by no means an expression of kindness, since it promotes unfounded illlusions about the future. Similar harm is done by attempting to estimate the time which the patient must spend in the cure. A time-honored arbitrary figure still used far too extensively is six months. This figure applies to the smallest possible fraction in any diagnosed group studied, and again makes for improper planning. Another source of difficulty in preparing the patient for hospital care is an unrealistic or unduly encouraging portrayal of hospital living and treatment. The physician, nurse and social worker in office and clinic setting have much to answer for in the proper orientation of the patient to his disease. The lecture method is inadequate, for in many instances patients will hear and accept selectively only the information that they need to incorporate in their psychologic defensive system against the disease, or they may misinterpret in accordance with this need. Frequently a person will appear to accept too readily the necessity for immediate hospitalization, and a sensitive, skilled interviewer is required to recognize whether the response is real. An attempt should be made to discuss the full meaning of the acceptance before the interview is considered satisfactory. A young man was found to have a minimal, exudative lesion following examination by Selective Service. Hospitalization was recommended, which the patient accepted readily without even feeling the need to consult his family. On admission to the sanatorium eight days later, he was found to have extensive, pneumonic disease on one side, as well as a spread to the contralateral lung. Investigation revealed that the patient had spent the interval between diagnosis and admission to the hospital in the amusement section of a large city, since he felt that he was starting on a "jail sentence" and wanted to accumulate "all of the fun" possible. A fuller understanding of the range of emotional reactions to hospitalization and a recognition of its implications for the individual might have averted this misfortune.

A few words might be said on the subject of interviewing. The example cited makes it clear that the most important element must be the eliciting and "working through" of all the patient's feelings which bear on the particular problem. It would have been important, in this instance, to make it possible for the patient to express his feeling that hospitalization meant imprisonment, to find out why he was making a serious decision without the need to consult his family and to try to understand, with the patient, why he had to embark on a round of pleasure before he committed himself to his illness. In a deeper sense, he was not inwardly accepting the fact of illness, but only the idea of outer compulsion, i. e., of being sentenced to jail. Interviewing requires the establishment of a special kind of relationship with the patient, if he is to feel free to reveal himself fully and still know that his personal integrity will be respected.

The problems encountered in preparing a patient for his cure depend on the patient's personality structure and the emotional difficulties that existed prior to his breakdown with tuberculosis. Persons with strong defenses against dependency will need special consideration, since the basis for a good cure is acceptance of the dependent situation. The development of a dependent relationship with the therapeutist—it may be a physician, nurse or social worker—in the course of which he learns how to be dependent without feeling threatened, may help him to accept further planning. The patient must be given the opportunity to bring out the feelings stirred up when he is told that he has tuberculosis before he can move on to further orientation. If the illness produces a sense of guilt and worthlessness, as it sometimes does, he must be able to feel that he will still be accepted and cared for and that recognition of his problem will not bring rejection. In addition to the problem of orienting the patient to his illness, and the corollary of working through emotional patterns which interfere with the acceptance of the disease and its cure, there are, almost invariably, objective problems which must be met, financial insecurity, care of children and other areas of social and economic planning. We must guide the patient in the development of a new reality that will meet his needs, and the patient's family needs similar help and guidance.

When a patient is hospitalized, he is asked to accept an organized, communal type of living with a set routine over which he has little control. He gives up the right to choose the place in which he will live, the persons with whom to associate, what meals he will take, his retirement hour and virtually every other phase of his mode of living. He must establish a relationship with the authority which he finds in the institution. He should be prepared, prior to his admission, for the kind of environment which he is entering, and his decision to accept it should be based on a readiness to make sacrifices in order to get well. The

decision is often based on questionable grounds. In some instances, it may be forced by a rejecting family. The patient may sense the rejection and leave in accordance with their wishes, but regards himself as an outcast, his hospitalization as enforced exile and the entire plan of treatment as a dangerous projection of the family's hostility. One patient, after marital discord, came to the hospital in order to prove to his wife that he was an adequate male; to demonstrate to her that he could get well. Never having been an aggressive or strong personality, his image of the new, strong self that would emerge along with a cure was completely unrealistic.

The reactions to hospital living are as varied as the reactions to pronouncement of the diagnosis, and are likewise dependent on the basic personality structure and the habitual reaction patterns of the patient. Persons with a strong sense of guilt and need for punishment may regard the hospital as a prison, hospitalization as a sentence or prison term. This may be associated with compulsive questioning about the length of stay, as if to make sure that it was in keeping with the real or fantasied wrong committed. Those who are more impressed with the contagious aspects of tuberculosis may think of the hospital as a kind of leper colony. In such persons, there may be hostility at being "put away," expressing itself in the form of carelessness about hygienic precautions to prevent the spread of the disease.

In the entire treatment of tuberculosis, bed rest still remains the cornerstone. Unfortunately, because of difficulties in impressing the patient with the need for such treatment, as well as lack of personnel to make it effective, bed rest has come to mean many different things to many different institutions. There is little doubt that such enforced inactivity tends to intensify preexisting emotional problems. The patient's apprehensiveness and tension while on bed rest may produce physiologic changes, such as tachycardia and overbreathing, equal to the moderate activity of the patient who is up and about. A favorite army term is that of the patient who "does 10 miles a day in his sack." Persons with strong defenses against dependency find difficulty in learning how to rest, and maintain restless hyperactivity throughout their hospital stay. There is, for example, the patient who placed her head at the foot of the bed after shock blocks had been applied at that end; another who maintained an erect, sitting, cross-legged, alert position in bed during most of her waking time. There may be times when the patient who normally accepts bed rest suddenly finds himself no longer able to do so because of concern with some family or personal problem. The patient who accepts dependency more readily is often easier to cure but more difficult to rehabilitate vocationally and to return to activity. Sometimes the acceptance of bed rest may be associated with pathologic withdrawal, as in the case of 1 patient who slept for twenty hours a day for a period of about a year. Patients may have difficulties in their relationships with other patients and with hospital personnel. They may be morose, sullen and distrustful with those in authority. They may carry such attitudes to the point of provoking conflicts and inviting disciplinary action. Another difficult problem of management is the noncomplaining, superficially compliant patient who resorts to more indirect methods of expressing his resentment.

The problems arising from the need for segregation and for an extended period of bed rest make it evident that the personality of the tuberculous patient is the controlling factor in his cure. When active treatment such as pneumothorax, surgical collapse and pulmonary resection are advised, a type of relationship is set in motion in which the patient must become even more passive than while at rest—a relationship in which he is passive while something active is done to him by the doctor. Such problems are associated usually with the use of instruments, "needles," and surgery in general. There is introduced the fear of attack on the integrity of the body with an associated fear of death. Ignorance is here, too, a factor in the attitude toward treatment. The procedures involved are strange and unfamiliar, and the patient needs adequate explanations and an opportunity to assimilate the knowledge before the procedure is carried out. If such explanations are given without complete understanding on the part of the patient, there is the danger that nonprofessional information will be passed on by the ubiquitous "porch professors" seen so commonly in sanatoriums.

We have mentioned the transient shocklike reaction of "psychologic blackout" which occurs when the patient first learns his diagnosis, and severe reactions may likewise be manifested when the subject of surgery is broached. A social worker was sent to see a patient who was in a state of excitement and agitation. During the interview the social worker learned that the physician had just informed the patient of the need for thoracoplasty. Although she had previously been told that her case was to be considered for surgery and that it would most likely be recommended, the patient's reaction to it was one of amazement followed by acute anxiety. The social worker was asked for an explanation of what thoracoplasty involved, and she in turn inquired as to whether the physician had furnished such an explanation. It was learned that the physician had spent twenty minutes in the discussion but that the patient had heard nothing beyond the word "thoracoplasty."

Over and beyond the usual individual attitudes and fears of the patients, there are certain common fears and prejudices related to medical practice which require careful handling. In some instances the fear may be so great that the patient decides to refuse collapse therapy and to depend on his own "healing powers."

There are two common fears associated with pneumothorax—fear of the "needle" and the fear of complications. Fear of complications is generally handled more easily, through education and reassurance. A well formulated "needle phobia" may require psychiatric treatment. Sometimes patients may refuse pneumothorax because of some misconception about the term "collapse," such as the patient who visualized permanent "squashing" of the lung. Pneumothorax may be associated with digestive disturbances either on an organic or on a psychologic basis. In the latter instance, these symptoms appear in response to apprehension and require psychotherapeutic management.

Thoracoplasty is more often associated with fear of pain, mutilation and death. To understand and to help the patient master these fears often require detailed understanding of the psychodynamics of the personality. We have observed that recovery is facilitated when patients get psychologic help in preparation for surgical treatment. The psychologic trauma produced by

the recommendation for operation produces tension states which are additional hazards to the surgical team. Adequate ventilation of the ideas and feelings associated with the tension will tend to reduce it, while neglect often results in prolonged excessive pain and an extended period of invalidism. A common short cut to relieve pain is the free administration of narcotics, which may result in serious addiction through overusage. The pain is generally more severe at night when distracting forces are absent. In response, patients may "splint" the chest, resulting in increased pain and increased difficulty in breathing. This may start a vicious cycle of anxiety (because of the embarassment of breathing), leading to arrhythmic and rapid breathing, dyspnea, further anxiety and a train of further symptoms. There may be an actual need of oxygen because of the pseudodyspnea. The patient's sleep may be disturbed by nightmares concerning mutilation and death. One patient had a recurring dream, following surgical treatment, of sitting down to eat with her family, but they did not see her, for she was dead. She awoke with a suffocating sensation. This same patient talked of the "falling apart" of her chest, and found comfort in the use of a binder to "hold her together."

After the lesion has become stable and the patient is considered ready for building up to discharge, several approaches are possible. Long walks up and down the mountain side were first used by Brehmer,[3] and later adopted in a lesser measure by other physicians. Possibly in rebellion against the hardening activities promulgated by Marcus Paterson,[4] which involved 6 mile (9.7 kilometer) hikes carrying graded weights, there was a swing toward less arduous activities. More recently it has been recognized that long walks of whatever nature are not realistic preparation for community living, and it seemed better to substitute activities more in keeping with what the patient would be doing after he left the institution. These activities of a prevocational and vocational nature have multiple value in that, in the several months in which they are practiced before discharge, it is possible to follow the course of the pulmonary lesion, build up the patient's reserve, begin his vocational retraining program, and finally establish in the patient the confidence in his own ability to perform definite work. Such results may be grouped under three possible headings: (1) evaluative, i. e., determining work capacity; (2) hardening, or stabilizing work capacity, and (3) retraining, or maximal use of work capacity.

There has to be a decided change in the psychologic situation of the patient when this stage of his hospitalization is reached. Most patients view the increasing activity phase of the cure with specific fears. They know it to be an evaluative phase and fear reactivation of the disease. Various suspicious and rebellious tendencies may appear at this time, and patients may accuse the institution of "rushing" them up in order to give their beds to incoming patients. These reactions are understandable if one reviews the psychologic situation once again. The patient has become dependent on the institution. He views any encouragement of a return to independence like the young child with a fear of rejection by the parents, symbolized by the hospital personnel. In response to such a feeling of rejection, all forms of rebellion are possible. One type of reaction is seen in the patient who underdoes. Various somatic symptoms are commonly encountered in these patients, such as colds, dyspnea and vaguely defined pains. They make the slightest excuse to return to bed. One patient expressed severe insecurity about her ability to become once again an active member of a group. She was self conscious about her appearance and shy about her ability to engage in social conversation. She feared going to the main dining room, like the young adolescent who fears her first dance. While we do not want to encourage the continuance of such a childlike state, we do have to accept it, and on the basis of this acceptance, with encouragement and support, the patient will be able to grow beyond it.

The patient who overdoes is equally a problem. When called to account for it, he may make such responses as, "It is natural to try to cheat." Overdoing is often a response to fear of failure on return to the community. It is found among patients who, prior to their illness, found it necessary to do more than the average in order to maintain a sense of security. Their fear of failure is so ingrained that they must push themselves to continuous accomplishment to feel reassured about their strength. One patient reported that, while comfortable during his stay at the hospital, he experienced severe generalized irritability after discharge because of his fear that he was not building up his business fast enough. People wanted to celebrate with him over his cure, but he wanted only to get to work. At times, the tendency to overdo is associated with an unrealistic "flight of fancy" concerning some new powers. We occasionally find patients with no more than a high school education insisting on being "rehabilitated" to the profession of a physician or some equally unsuitable goal. Sometimes adolescent interests and fantasies reappear, and we find patients seeing themselves as artists, writers, etc. It is interesting how much planning and physical effort they may expend toward attaining such goals. The misfortune is the associated high rate of breakdown. These patients may argue that life is not worth while if limitations have to be maintained and that if life with health is not possible they would rather expend life in one final splurge. This type of patient has obviously not really accepted his illness, and psychologic treatment is indicated.

Planning should be started well in advance of the proposed date of discharge, for "separation" from the hospital has its psychologic hazards. To the uninitiated, it might appear that discharge is a happy occasion; to the tuberculous patient it often is not. It is accompanied with the fears set in motion when the patient begins his increasing activity. It is at this time that somatic complaints often assume a dramatic quality. The somatic complaints should be treated as well as the underlying fears, and not coldly dismissed as "psychological."

REPORT OF A CASE

A single, 35 year old man, with a history of repeated breakdowns and voluntary discharges over a period of many years, had long boasted to other patients and the staff of his abilities as a business man. He had been successful, and because of the gratification through this success, had never been able to accept a long hospital stay. It was his father's metal business in which he had been active. Prior to his last

3. Brehmer, H.: Die Therapie der chronischen Lungenschwindsucht, Weisbaden, J. F. Bergman, 1887.
4. Paterson, M.: Autoinoculation in Pulmonary Tuberculosis, London, James Nisbet & Company, Ltd., 1911.

admission, the father died. The patient was not able to hold on to the business. When put to the final test as a business man, he failed, and blamed world conditions and progressing disease for his failure. During his last stay in the hospital, he still talked the language of the big business man and engaged surreptitiously in various investments, which also failed. He was critical of other patients, whom he accused of being "hospital bums," stating that any one who wanted to make money could. When his discharge date approached a gastric disturbance developed, accompanied by a rise in temperature. The nurse accused him of malingering, and would not permit him to stay in bed. He feared to complain, lest he "make trouble," because he "was dying to leave the hospital" and wanted to leave it with a good record. His protestations were accepted by the social worker, who saw the need for reevaluating his earning capacity and for allowing time for this to take place. The patient refused to discuss, at this time, his plans for earning a living. The situation was reported to the medical staff. Roentgenograms revealed a developing peptic ulcer. A special diet was recommended, and the patient was kept in bed until the temperature returned to normal. He responded then to the social worker with a puppy-like devotion, and began to express his fears of the "outside." He had done some dramatic work in his youth, and had applied at a local radio station for employment. He was frightened, however, by a fear that he would not succeed and would not be able to manage on the small salary offered. After this "confession" he again had a rise in temperature, accompanied by diarrhea. The nurse again accused him of malingering, stating that he had eaten excess foods which were not on his diet. Further interpretation was made to the nurse. By this time the patient was in mortal fear of the nurse, carefully avoiding her, and yet breaking regulations that brought him to her attention. Further work with the social worker led to further expression of insecurity and a fear of loneliness. He had been happy in the hospital and liked the friends that he had made. It was not easy to leave. Further planning resulted in a decision to become a jewelry salesman; the patient was able, himself, to make the necessary contacts to start this employment, and a discharge date was set. A few days later "sore eyes" developed, and it was necessary to administer medical care. The patient revealed to the social worker a desire for a few more weeks to prepare himself. His request was granted because it was felt that he really was grappling with the problem of leaving, and was not using the time merely to avoid facing his problem. The patient was able to leave finally, and was successful as a jewelry salesman. As his earning powers increased, he again talked the role of the big business man, but there was an added sense of humility. His talk was more in the nature of humor, poked at himself, which others could share with him.

The emotions stirred up by discharge are in truth paradoxical. On the one hand there is a desire to renew independence, but, on the other, a reluctance to give up the protection so freely offered during illness. The patient needs help and security to see him through the predischarge period, and reality factors must be solved. If he plans to return to his family, it is necessary to prepare them for his return. As significant a role as the patient may have had at home, new patterns are often set up during his separation. The family must be helped to make a place for the returning patient.

We have finally to consider the orientation of the hospital staff to the psychologic problems of the tuberculous patient. The hospital for tuberculosis is unique in offering long term institutional care to a group of patients among whom are so many young adults. The expansive social impulses of these patients, complicated by incompletely adapted sexual energies and the inevitable insecurities of persons who have not yet found their place in the social order, present a significant challenge to the hospital administrator and his staff. He may establish a policy of repression enforced by threats, deprivation of privilege and discharge, or he may turn his back completely on the problem of group management, allowing free rein to individual impulse. Somewhere between these extremes, the administrator may recognize a balance in which morale of the group is sustained by reasonable but firm external discipline while at the same time an effort is made to meet individual problems through personal interest and attention and through skilfully integrated, individualized recreational and retraining programs.

To find and maintain such a balance requires the full cooperation of all members of the medical staff. It requires that the physician learn to recognize the interaction between group discipline and individual welfare and accept the responsibility for supporting hospital policies and regulations with all patients at all times. Since only such an attitude will serve the ultimate welfare of the patient, it is by no means inconsistent with genuine sympathy and consideration. The physician who finds it difficult to hold his patients to maintaining rules substitutes indulgence for welfare. Equally undesirable is the approach of the physician who is rigid in enforcing rules without true regard for the patient as a person.

An interest by the physician in the psychologic problems of the patient is, to start with, more likely to be the exception than the rule. There is as yet no tradition of personality study in medical school training. However, an interest in psychologic management of patients may be created, as we have found in our work, through regular staff discussion of psychodynamic problems with consistent emphasis on the why of patient behavior, and with attention to the relation of behavior in patients to the personal reactions of the physician and to the general morale atmosphere in the institution. Weekly staff seminars on problems of personality have highlighted the important interplay between the patient's personality, the various phases of his illness and its care, and the course and outcome of the disease. We have not observed any personality factors which appear to have an etiologic significance, but there does seem to be a relationship between personality trends and prognosis, which cannot be discussed within the limits of this paper. In any event, a continuous program of personality seminars has resulted in awakening a genuine interest on the part of staff physicians in the problems of patients as people, in their human strivings, needs, and resources, and, perhaps more important, in the reactions of the physicians themselves to their patients.

In summary, we have presented a cross section of psychiatric problems relating to every phase of the care and management of the tuberculous patient, from the time of diagnosis to his return to the community as a person with arrested tuberculosis. We have emphasized that psychiatric insight is not an occasional need but that it is of continuous importance in any program of comprehensive care in tuberculosis. The consistent and systematic utilization of psychiatric resources, applied to every phase of medical care and oriented to the understanding of the person who is ill, imposes a greater area of responsibility for the physician but promises enrichment in the concept of the practice of medicine and significant extension of therapeutic services to the patient.

PSYCHOSOMATIC MEDICINE THAT EVERY PHYSICIAN SHOULD KNOW

Centennial Address

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What is this new psychosomatic medicine that we physicians are now hearing so much about? Is it something that we can disregard and leave to the psychiatrists or is it something that every one of us, in general practice and every specialty, must know about? Actually, practically every physician should know much about psychosomatic medicine. Why? Because without such knowledge he is likely each year to make hundreds of unhappy mistakes, to order scores of futile operations and to scare half to death hundreds of organically sound but worrisome persons.

MANY PATIENTS HAVE FUNCTIONAL TROUBLES

The first thing that we physicians must do if we are to practice psychosomatic medicine is to recognize that a large percentage of the patients whom we see each day are ill mainly or solely because of an inborn hereditary tendency to nervousness, worrisomeness, abnormal and painful ways of thinking and constitutional frailness. They have no demonstrable disease in the thorax or abdomen to account for the local distress.

The next thing to recognize is that we have been failing to help a high percentage of these patients, largely because we were not trained at college to recognize the typical syndromes of neuroses and partly because in attempting to diagnose puzzling problems we have come to trust too entirely to a thorough laboratory and roentgenologic overhauling. Such overhaulings are splendid and most helpful, and we must go on using them more and more, but we must always keep in mind that there is no test that will tell us that the woman sitting there before us is dying of a broken heart, or suffering from a nervous breakdown due, perhaps, to an insane inheritance, or terrible overwork, or the breakup of a love affair or marriage, or the death of a loved one, or years of tragic living with an abusive or alcoholic or unfaithful husband. There is no test that will warn us that the shy reserved man sitting on the other side of the desk is going insane or is already mildly insane. These things must be learned from a shrewd size-up of the patient and the taking of an adequate history.

MANY DISCOMFORTS ARISE IN THE BRAIN

We physicians must constantly keep in mind the fact that all patients have a brain, and that it is an organ of the body—subject to many diseases all its own. Today, because of our one-sided training in college, few of us physicians ever think of the brain as a source of discomfort and pain, especially when these distresses are felt in the thorax and abdomen. It does not occur to us often enough that a pain or ache or burning can be referred out from the brain to the periphery, or that a storm in the brain can upset digestion just as it is upset in the case of seasickness. It does not ordinarily occur to us that one person's feelings of well-being, good health and happiness, or another's feelings of anxiety, fatigue, ill health and lack of any joy in life can arise in the brain and can depend largely on the nature of the original nervous inheritance. As everyone knows, some persons never feel ill, while others are always miserable and always going to physicians.

Why do I think that the distress of the tired miserable persons arises largely in the brain? Because (1) they behave so differently from the persons with a good brain; they are so fussy and fretty and worrisome and overcomplaining; (2) they so often have a bad nervous inheritance, and (3) the destruction of part of the brain of a previously happy healthy person by thrombosis of an artery can, in a moment, change him into a permanently weak, sickly, unhappy and querulous invalid.

INSANITY AND PSYCHOPATHY ARE COMMON

Perhaps the quickest way in which I can bring home to you the importance of studying psychosomatic medicine will be by showing how terribly common psychopathy is in this country. As Parran, Cobb and others have estimated, approximately one in seven of our drafted men who passed the physical tests had to be rejected for mental unfitness; perhaps one person in thirteen in this country is either insane or in need of psychiatric help, and one in nineteen in the community will eventually be committed to some public institution for the care of the mentally unfit! More than half of our hospital beds are already taken up by the insane, and huge new asylums are now being built to house mentally unbalanced veterans, most of whom would never have been inducted into the armed forces if we had had enough psychiatrists available to weed them out.

The next thing to remember is that for every one of these millions of the insane and the psychopathic there are a number of near relatives suffering from equivalents, such as chronic invalidism, unemployability, alcoholism, vagabondism, criminality, deaf-mutism or bad stammering. Many of these relatives are the so-called chronics who fill our waiting rooms and cost the country huge sums for medical care and relief.

Why do I so emphasize here these distressing facts? Because until recently we physicians were unconscious of them, or if we did hear of them we ignored them; to us, insanity always seemed a problem apart, of concern only to superintendents of asylums. We knew nothing about it; we had no desire to learn anything about it, and, worst of all, we could not see what concern it was of ours. Today we are just beginning to see that from the fringes of this huge reservoir of psychopathy we are getting a high percentage of our most troublesome patients with the most puzzling diagnostic problems. Furthermore, for lack of any training in psychiatry we keep failing to see that quite a few of the patients whom daily we label as just overly worried, hypochondriac, "enjoying illness," chronically exhausted, uncooperative, or just "ornery," sullen, mentally inaccessible and unfriendly, are mildly but definitely psychotic. Today we are beginning to see that there is a type of psychiatry which is our business and which we cannot disregard or leave unlearned or unpracticed. Soon, I hope, we are going to realize that insane persons are daily going through our vaunted complete examinations and coming out with a perfect report!

THREE IMPORTANT DISCOVERIES

Perhaps the most important point that the study of psychosomatic medicine has of late been bringing to the fore is that a high percentage of the illnesses which

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we physicians see every day are functional in nature and due to either poor nervous heredity or great strain and stress in life.

The next important point is that a nervous shock or a great strain can bring out not only functional disease but sometimes organic disease, such as peptic ulcer, hypertension, arthritis, heart disease, diabetes, disease of the skin, asthma, enteritis, hyperthyroidism or cerebral thrombosis. More commonly, nervous strain will cause a flare-up in the course of one of these organic diseases. Even in cases of gallstones, many a colic follows a fit of temper.

The third important fact, and perhaps the most important of all, is that even when a patient has definite organic disease or the scars of such disease, as in cases of old coronary thrombosis, most of the symptoms or all of them may be due purely to fear. As the older physicians used to say, the syndrome of organic disease is embroidered with the symptoms of a neurosis, a bit of hysteria or a psychosis. In such cases it takes a wise internist to unscramble the puzzling picture and to assign each symptom to its proper cause. When this is well done it often results in a spectacular and most grateful cure, with the patient restored to his job.

THE GREAT NEED TODAY FOR A STUDY OF PSYCHOSOMATIC MEDICINE

Could the quality of medical practice be improved today by a study of psychosomatic medicine? Most assuredly, yes. All that a physician need do to become convinced of this would be to sit for a few days in the office of some busy consultant and watch the passing procession of patients who had received all sorts of questionable diagnoses and futile treatments simply because several well intentioned but too "organically minded" physicians had failed to recognize a typical neurosis. That the average surgeon today does not easily recognize hysteria or mild insanity must be obvious to every psychiatrist as he looks at the badly scarred abdomens of many of his mentally deranged patients.

Perhaps the surgeon saw that a girl was a bit psychopathic but he was not able to recognize her neurotic syndrome at a glance, and he did not know that it was one that could never be cured by any operation. In other cases he suspected a neurosis but was not sure enough of it to refuse the proffered help of a roentgenologist who reported a slowly emptying gallbladder or a queer-looking appendix or a low-lying kidney; and in still other cases he did not take a history good enough to show him that the stone in the gallbladder or the myoma on the uterus was silent and harmless, and certainly not responsible for the patient's symptoms. Often, also, the surgeon had not yet broken himself of the conviction that once he had his hands in the abdomen he could surely find the cause of all the patient's troubles.

FREQUENT NEED FOR RECOGNIZING A NEUROSIS FROM THE HISTORY AND THEN DISREGARDING LABORATORY REPORTS

Today there is much need in medical practice for (1) greater skill in diagnosing functional troubles immediately from the history and (2) greater skill in ignoring incidental findings which cannot possibly be responsible for all the symptoms. Too often today the attempt to diagnose a neurosis by exclusion of organic disease fails because the examination turns up some inconsequential finding which is promptly accepted as the cause of the whole syndrome.

That such findings must often be disregarded was well shown by the case of a nervous, fretty and unhappy woman of 50 who wept when I told her that I did not know how to make her well. As often happens, she accused me of not having examined her thoroughly enough to find organic disease, but as I said, my colleagues and I had found plenty of that. The trouble was that none of it could account for all of her misery. She had a hypertension, but in the absence of heart symptoms, headache or dizziness, this appeared to be silent. She had a slightly increased basal metabolic rate, but, seeing that her symptoms were not those of hyperthyroidism and that she had not gotten better when her home surgeon had removed most of her thyroid gland, it did not seem advisable to resect any more of it. She had a couple of pea-sized soft gallstones floating around in a functioning gallbladder, but seeing that she had had no symptoms of cholecystitis, it did not seem worth while to operate. She had some little stones imbedded in the pyramids of the kidneys, but as her urine was sterile and she was not having any urinary troubles we left the kidneys alone. She had a small myoma of the uterus, but it was not giving any symptoms. She had chronic urethritis, grade 1, but it was of the type that gets worse the more it is treated. What was the real cause of her jitteriness, unhappiness, aches all over, insomnia and frequent urination? Simply that her husband had gone to live with another woman. I did not know of any medicine or operation that would cure this type of disease, and hence I felt pretty hopeless.

Oftentimes the physician must be careful even when the laboratory girl seems to have made a perfect diagnosis for him. For instance, one day I saw a man with a pulse of 140 beats a minute. The physician who came with him felt that he must have hyperthyroidism, but I much doubted this because his skin was cool, he was not restless, he had no tremor, his eyes were normal, he had no goiter, he was not perspiring, he was sleeping well enough, he was not overly hungry, he had no diarrhea, and he had not lost any weight. The next day, when the laboratory reported a metabolic rate of plus 25 per cent, the physician was jubilant. But I noted in the report the comment "unsatisfactory," which meant that the man had not behaved well; he had been uneasy and had breathed irregularly. The next day the report was plus 5, a day later it was minus 5, and a day later it was minus 12. In the meantime, the wife reported that in the mornings when he woke his pulse rate was 65 beats a minute, and as he got used to me his pulse rate in the office dropped to 85 beats a minute. Then I found, as I had suspected, that the man had insane relatives; he was a bunch of nerves, and these nerves were playing tricks with his heart. When he was reassured, he got much better.

EVERY GOOD PHYSICIAN MUST BE, TO SOME, EXTENT, A PSYCHIATRIST

Every good physician who will take time to sit down and talk with his patients must become, to some extent, a psychiatrist. He has to. I never wanted to be a psychiatrist, but, willy-nilly, I have had to become a sort of one. Often, I have to practice psychiatry even when the patient has organic disease such as severe hypertension, an old coronary disease, the scars from a stroke, or even a carcinoma somewhere. Often I have to help the man to understand his problem and

to live with it. I have to boost his morale; I have to give him hope and comfort; I have to teach him to live more wisely, and I have to give him some reason for carrying on bravely.

Similarly, Dr. John Stokes found years ago that he could not be a good dermatologist unless he were also a good psychiatrist because so many of his patients had neurodermites. More remarkable yet, he could not be a syphilologist without taking time to help the morale of his patients and to give them the courage to stay with their treatment and to face life again. Dr. T. A. Ross, the great psychiatrist of England, started as a general practitioner who, finding that most of his patients needed mental help, finally went the whole way and specialized in nervous problems. Similarly, Dr. William Sadler, after being a surgeon and noting how many of the men and women sent to him for an operation were much more in need of wise counsel, gave up operating and became a psychiatrist.

Some one once said, very wisely, that any one who is capable of opening an abdomen is a terribly dangerous man to let loose on the community unless he has some knowledge of psychiatry. Even an eminent consultant, if he comes to depend too entirely on the laboratories and fails to take adequate histories, will soon be making terrible mistakes, some of them costly to his patients. The general practitioner, who often knows his patient's hereditary tendencies as well as his problems in office and home, with all their strains or unhappiness or tragedies, is much less likely to make these mistakes than is the big city consultant who knows nothing of the background of the man or woman who comes there before him. Often the consultant could save himself from making a bad mistake by questioning the patient's spouse or relatives or business associates. Particularly in cases of mental derangement or a nervous breakdown or a small stroke they alone will tell of big changes in temperament and character and ability to work; they alone will tell of queer behavior.

WHAT IS TO BE DONE?

What is to be done to improve modern practice and to avoid the pitfalls that lie in our paths? I would say, especially to all you older practitioners with wide experience, trust more often to your sixth sense which tells you that the patient before you is primarily a highly nervous, fussy, hypersensitive, worrisome or decidedly psychopathic person who ought to have a neurosis, whatever else he or she has. Usually this first hunch is correct, and many a good physician makes a mistake when he fails to stick to it. Oftentimes he should stick to it even when some city consultant like me, who does not know that there is insanity in the family or that the woman's husband is drinking or chasing, makes some fancy diagnosis, perhaps of a low blood sugar, or brucellosis, or Addison's disease, and is wrong.

When, for years, you have been doing your best to keep going a frail, always sickly, whiny girl who is just like her inadequate mother, her queer old aunt and her good-for-nothing uncle, you are not going to get excited over some internist's diagnosis that all her troubles are due to a retrocecal appendix or a low-lying kidney. You know that no surgeon is ever going to make her over into a husky girl, no matter how many organs he takes out of her abdomen. The only way in which you can hope to help that girl is by getting her to stop looking for a quick miraculous way out of her troubles and by talking her into trying to live more sensibly with what little strength she has.

ON RECOGNIZING THE SYNDROMES WHICH ARE PRACTICALLY ONE HUNDRED PER CENT FUNCTIONAL

We physicians should all learn to recognize quickly those syndromes which are probably always functional in origin. We must learn when to suspect that a patient's main trouble is a nervous breakdown or fatigue state, and one of the best signs of this is an inability to work comfortably, if at all. Another good sign is an inability to read. The patient says his eyes quickly tire; he gets tense, his head feels as if gripped in a tight band; he reads a paragraph over and over again and gets little out of it. Usually he cannot sleep, and he is irritable and overemotional.

A common nervous symptom is that of air hunger, the feeling that one cannot take a deep enough breath. In attempting to relieve herself of this distress many a nervous woman hyperventilates her lungs and gets dizzy and faint. Others suffer from globus, or a whispering voice, with nothing wrong with the vocal cords. Many with a normal heart and a good wind are frightened by palpitations and by extrasystoles which are harmless and to be disregarded.

Other nervous persons regurgitate; they bring up mouthfuls of food at the table or shortly after leaving it. I have never seen this symptom in nervous men and women produced by any organic disease. Still more common is the nervous gulping of air with noisy and repeated belching. This syndrome is not due to indigestion but to nervousness or fear.

Heartburn, or a burning under the sternum, appears generally to be a functional trouble even when the patient has some organic lesion in the stomach or duodenum. Burning over the abdomen is usually functional in nature and appears to be a paresthesia out in the skin.

Quivering, or a sensation of butterflies in the abdomen, is always functional in origin, and is usually associated with a general jitteriness. The syndrome of the sore, cordlike, mucus-producing colon is always functional, and exploration of the abdomen will show only a normal-appearing bowel. The bloating that comes immediately after eating or drinking is due to an overly irritable stomach and bowel. In perhaps 9 of 10 cases of diarrhea, the bowels get loose when the patient becomes fearful or panicky. Distinguishing features also are a lifelong tendency to get loose bowels with excitement or fear, a tendency to have only one or two large loose movements and then normal ones again and a tendency to be normal at night and troubled only during the day.

A pain of nervous origin often proves, on cross-questioning, to be an easily bearable ache which used to come at rare intervals, then at shorter ones and eventually became constant, day and night. Sometimes such an ache will extend on one side of the body from the head to the foot. "Psychosomatic rheumatism" is associated with neurotic behavior, and the aches get worse, not with changes in weather, but with emotional upsets.

Frequent urination by day but not by night is usually due to nervousness, worry and indecision. Fussy women past 50 years of age who complain much of the bladder usually have a urethritis of minor grade, but since the symptoms get worse with treatment it would seem that the best diagnosis is "irritable bladder."

That common hereditary disease, migraine, accounts for much of the hypersensitiveness, sickliness and fatigue of cultured, quick-witted women. It has a number of interesting equivalents, such as abdominal discom-

fort, nausea, dizziness and mild depressions lasting a day or two. The physician must often suspect migraine from the woman's appearance and then draw out the typical story of sick headaches.

Many puzzling chronic troubles are mild equivalents of insanity, and the physician must ever be on the watch for them. Relatives of the insane often have erratic autonomic nerves which play curious tricks on the many organs of the body, and a poor nervous inheritance often accounts for a tendency to hysteria, hypochondriasis, excessive worry, menstrual difficulties and a poor adjustment to life.

The physician should be on the watch, also, for the rather sullen-looking irascible relative of the epileptic person, with perhaps headaches, ulcer-like pains, sexual difficulties or difficulties in adjustment to life. Often in such cases, the electroencephalogram will show a typical dysrhythmia.

ON BETTER TREATMENT OF NERVOUS AND NEUROTIC PATIENTS

When a physician decides that he is going to give his nervous patients a better deal, perhaps the first thing to do is to decide that he will never again consciously resort to a placebo of diagnosis to get the patient quickly out of the office; he will say either that he does not know exactly what the trouble is or that he thinks that it is functional or nervous in origin.

Next, when he diagnoses a functional or nervous trouble he will not stop there but will go on taking the type of history that will enable him to say what one of a score of functional troubles it is. Only in this way will he be able to satisfy the patient and to prescribe a treatment that will "hit the spot." A prescription for phenobarbital will not cure every one. A brief description of the commoner functional abdominal disturban es can be found in my article "What is Wrong with the Dyspeptic All of Whose Findings Are Negative,"[1] or in my book "Nervousness, Indigestion and Pain."[2]

The next thing to do is to learn the difficult art of telling a neurotic woman that her troubles are purely functional without making her angry, outraged and rebellious. One must talk to her with such sympathy, kindness and understanding that she will accept the diagnosis and go away determined to mend her ways and get well. Of course, there are some patients who have too low an intelligence quotient or who are too psychopathic either to get any insight into their troubles or to cooperate with the physician. They will not accept the diagnosis of a functional trouble and they cannot mend their ways. Accordingly, I hate to spend time with them; I so fear that it will be wasted. Some cases are too difficult for any physician not trained in the technics of psychiatry, and then the patient should promptly be referred to a specialist. Other patients can easily be cared for by any sensible, kindly and philosophically inclined physician. More of us must learn something of the art of psychotherapy, the art of knowing what to say and what not to say to a patient.

Actually, with friendly, sensible treatment, many neurotic persons can be greatly helped; they can be induced to start rebuilding their lives, and they can be taught to hoard their energies and to become useful citizens again. Some of the best work of this world is done by weaklings, constitutionally inadequate and psychopathic persons who have found a job that they can do—that is within their slender means of strength and that does not involve too much conflict with themselves and others.

Before we can help such persons we must listen patiently to their stories and must learn about the forces in them and their surroundings that cause disturbing conflicts and unhappiness; we must learn about the annoying boss, or wife or mother-in-law or the distressing inferiority complex. We must constantly strive to avoid committing the besetting sin of the would-be psychiatrist, which is to talk much and to listen little—to tell the patient what he is thinking and why he is doing what he is doing rather than to ask him what he is thinking and why he is doing things that are foolish.

Our advice must always be practical; in other words, we must not tell the widowed scrub woman with five children to take a vacation in Florida. Our speech must also be simple and colloquial, and we will do well to drive home our points with short illustrative stories. To be sure, all of this takes time, but it is worth while when, as often happens, we succeed in giving back health and happiness to some previously much puzzled and confused human being. Actually, health-giving psychotherapy often takes much less of the physician's time than would months of futile "shots" or dosing with sulfonamide compounds and penicillin, or trying to combat symptoms when the patient keeps returning disgruntled after a useless operation.

In trying to improve your methods of handling nervous patients I would suggest that you read some of the writings of Weir Mitchell and Riggs. Very helpful is Ross's fine article on the psychoneuroses in Oxford Medicine,[3] also Weiss and English's book on "Psychosomatic Medicine."[4]

I would like to express again the hope that all of you will, to some extent, become psychiatrists. In doing this you will come ever nearer to your ideal of being in every sense a fine, devoted, Hippocratic physician.

SUMMARY

Every physician must know much about psychosomatic medicine if he is to avoid making many diagnostic mistakes, ordering many futile operations, and scaring half to death many organically sound patients.

He must see that many of his patients are ill because of inborn nervousness, constitutional frailness, excessive worry or excessive strain. He must see also that none of the tests on which he so relies for a diagnosis will reveal a neurosis or psychosis or nervous breakdown. There is still great need for taking a good history and for sizing up the patient.

Many discomforts in the thorax or abdomen arise in the brain and are referred out to the periphery. Most of the feelings of chronic fatigue and ill health probably arise in the brain.

Some idea of the great importance of psychosomatic medicine can be seen from the facts that about one of every seven drafted men who passed the physical tests had to be rejected for mental reasons; about one person in thirteen in this country is insane or in need of psychiatric help, and one in nineteen will eventually be committed to a state asylum.

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3. Ross, T. A.: Psychoneuroses, in Christian, H. A.: Oxford Medicine, New York, Oxford University Press, 1936, vol. 7, p. 567.
4. Weiss, E., and English, O. S.: Psychosomatic Medicine: The Clinical Application of Psychopathology to General Medical Problems, Philadelphia, W. B. Saunders Company, 1943.

For every one of these persons there are several near relatives suffering from equivalents of insanity, such as chronic invalidism, unemployability or alcoholism. These are the "chronics" who fill physicians' offices.

Physicians have long thought insanity was no concern of theirs; today they are beginning to see that from the fringes of the huge reservoir of psychopathy they are getting a high percentage of their most troublesome patients. Today, physicians are beginning to see that there is a type of psychiatry that is their concern and which they must practice.

Recently three important points have come home to the medical profession: (1) that a poor nervous inheritance, unhappiness and strain can cause neuroses; (2) that they can bring to light organic disease or cause flare-ups of such disease, and (3) that in many cases of organic disease the symptoms are all those of a complicating neurosis.

A study of consultant practice and the many poor results of abdominal surgery reveals that there is still great need for improvement in the recognition of neuroses and the avoidance of futile laparotomies.

One cannot trust one's ability to diagnose a neurosis or psychosis by exclusion because too many inconsequential findings are disclosed by the examinations. One of the greatest arts needed in medical practice today is that of disregarding findings which cannot explain the symptoms.

Every good physician must, willy-nilly, become a psychiatrist.

What is to be done to improve matters? The family physician must more often stick to his strong impression that the patient is neurotic and the syndrome functional in nature. All physicians need more training in recognizing promptly the common neuroses just as they recognize whooping cough the minute they hear it. They must recognize nervous breakdowns, tired vision, air hunger, hyperventilation, globus, nervous whispering, palpitation, regurgitation, abdominal quivering, repeated belching, heartburn, nervous bloating, the "sore colon" syndrome, nervous diarrhea, nervous types of pain, the nervous bladder, psychosomatic rheumatism, migraine, the "nerves playing tricks" syndromes and equivalents of epilepsy.

When it comes to treatment the physician must resolve never again consciously to use placebos of diagnosis. When he says the trouble is functional he must go on taking a history until he knows what one of twenty or thirty types of functional trouble it is. Only then can he treat intelligently and successfully.

Many persons with nervous troubles can be greatly helped by any friendly, sensible, philosophically inclined physician. The worst ones should be sent to a psychiatrist.

ABSTRACT OF DISCUSSION

DR. FRANK N. ALLAN, Boston: Dr. Alvarez has performed a valuable service in the field of psychosomatic medicine. Although, as he admitted, he had no ambition to study psychiatry in the beginning, he can now speak with authority in this field. As pointed out, the diagnosis of functional disorder should not be made simply by exclusion of organic disease through laboratory tests or roentgen rays. The diagnosis must depend on observation of the positive features of the nervous state. In addition, a complete diagnosis necessitates more than this. To determine what to do, one must try to find out the kind of nervous state. It should not be assumed that all patients who have nervous symptoms are neurotic or have anything near insanity. Neurotic persons are in trouble largely because of conditions which lie within themselves. There are many others[4] who have what might be called benign nervousness, depending on external circumstances. A normal person can begin to have nervous symptoms if he is exposed to unusual stress and strain from worry, loss of sleep and danger. Several points enable one to make a distinction between neurotic persons and those who have benign nervousness. One is the reaction of the patient to reassurance. When informed that the examination has not shown any organic disease, the patient with benign nervousness is relieved and grateful. It is often rather easy then to guide him back to his previous state of health. The neurotic person, on the other hand, is likely to be disappointed, distrustful and unconvinced. This is the type of case which we most often choose to refer to a psychiatrist. When we do so, we give him a difficult task. The patient may continue to have his lifelong complaints. The classification of the nervous state is of the greatest importance, both from the standpoint of prognosis and from the standpoint of practical management of the case.

TREATMENT OF FILARIASIS BANCROFTI WITH 1-DIETHYLCARBAMYL-4-METHYLPIPERAZINE HYDROCHLORIDE ("HETRAZAN")

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The attempts to eradicate infections with Wuchereria bancrofti by means of chemotherapeutic agents have been greatly intensified during the last five years. The National Research Council listed over one hundred and twenty compounds which by 1945 had been given clinical trial in human filariasis.[1] Of all drugs used, only the antimony compounds have appeared to have beneficial effects. Of these, the pentavalent antimonial ethylstibamine has had the best antagonistic action on the filariae.[2] Antimony compounds apparently act on the adult filariae, the circulating embryos disappearing gradually from the blood stream. The complete disappearance of the embryos takes place from a few months, in some patients, to longer periods of time in others. A drug as yet had to be found which possessed a more marked and rapid effect on the microfilariae and the adult worms.

Hewitt[3] and his co-workers have recently reported on the marked filaricidal action of 1-diethylcarbamyl-4-methylpiperazine hydrochloride ("hetrazan") on nat-

The drug for these studies was supplied by the Lederle Laboratories Division and the Calco Chemical Division, American Cyanamid Co.

In the medical care of the patients we were assisted by Dr. E. J. Marchand and Dr. C. J. Margarida. The chemical studies were performed by Dr. R. Ruiz Nazario.

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urally acquired filariasis in cotton rats and dogs. The drug was given orally, and the therapeutic doses utilized on these animals failed to produce evidences of toxic effect on the host. Complete studies on the toxicity of this drug in animals were performed,[4] followed by toxicity studies on normal healthy adults [5] to whom were administered doses as high as 8 mg. per kilogram of body weight, without any serious or lasting untoward reactions. Clinical trial of the drug in human filariasis was next indicated. Some of the possibilities to be determined were: toxicity to man and, if the drug was filaricidal in the human host, the optimal dosage and the duration of treatment.

The data presented herein show that 1-diethylcarbamyl-4-methylpiperazine hydrochloride, administered orally, causes the rapid disappearance of microfilariae from the blood stream, that no serious toxic manifestations are evoked and that very possibly the drug also acts on the adult filarial worms.

METHODS

The 26 patients included in this study were all Puerto Ricans, twenty males and six females, ranging in age from 15 to 30 years. Twenty-three of the 26 were asymptomatic but were found to have positive night smears for microfilariae during a survey performed by one of us [6] at night schools in San Juan, or else were young men rejected from service in the armed forces for the same reason. The 3 other patients had symptoms suggestive of clinical filariasis, and these also were found to have microfilariae in their peripheral circulation at night.

All patients were hospitalized for treatment. On their admission, a complete medical history was taken and they were subjected to rigid physical examination, special attention being given to the lymphatic system. The following laboratory tests were performed on admission: (1) complete blood and differential counts, (2) complete determinations of blood chemistry, (3) urinalysis, (4) fecal examinations and (5) Kahn serologic tests. The studies on blood chemistry, complete blood count and urinalysis were repeated every third day during the period of hospitalization.

On the night before therapy was started and on regular occasions during treatment and thereafter, blood smears were taken. The time of bleeding in all was always from 7:45 to 8:30 p. m. The number of microfilariae was estimated in three smears of 20 cu. mm. of blood. The blood films were dehemoglobinized in water, fixed in absolute alcohol and ether (equal parts of each), stained with hematoxylin and destained with acid alcohol. The microfilariae were counted at a magnification of 100 diameters. The recorded values thus represent the total number of embryos per 60 cu. mm. of blood.

The drug was administered orally, three times daily, before or after meals, or every eight hours. The individual dose varied from 0.5 mg. to 2 mg. per kilogram of body weight, and the number of days during which treatment was given varied from three to twenty-one (the table). Ten patients were given a daily dosage of 2 mg. per kilogram of body weight, three times a day; two patients received 0.5 mg. per kilogram of body weight, three times a day. The rest received 1 mg. per kilogram of body weight, three times a day. The patients were seen and examined daily; any complaints and pertinent physical findings were recorded.

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RESULTS AND COMMENTS

Reaction to the Drug.—The drug was well tolerated in all instances. Unfavorable reactions due to the drug were never of such a degree as to warrant discontinuation of treatment.

The following were the most common reactions encountered, given in their order of frequency, with the number of patients affected: fever (16), headache (12), general malaise (9), lumbar ache (7), anorexia, nausea and vomiting (5), painful nodular swellings (4), aching joints (3), weakness (2), cutaneous manifestations (2), pain in testes (1), shortness of breath (1) and pain in the abdomen (1).

Effect of 1-Diethylcarbamyl-4-Methylpiperazine Hydrochloride on Circulating Microfilariae of Wuchereria Bancrofti

			Amount of Drug Administered Orally		Number of Microfilariae in 60 Cu. Mm. of Blood			
							Follow-up Examinations	
Patient	Age	Sex	Dose, Mg. per Kg., T.I.D.	Length of Treatment, Days	Before Treatment	Second Day of Treatment	Days After Treatment	Number of Microfilariae
1.....	30	M	2	17	30	0	83	0
2.....	30	M	2	18	7	0	30	0
3.....	26	M	2	16	220	1	83	1
4.....	27	M	2	22	1	0	83	0
5.....	25	M	2	11	27	2	83	0
6.....	15	M	2	4*	399	36	75	22*
7.....	19	M	2	6	142	15	63	0
8.....	23	M	2	6	97	20	63	3
9.....	16	M	2	6	14	1	68	0
10.....	27	M	2	13	49	3	55	0
11.....	17	M	1	13	130	13	60	0
12.....	40	M	1	14	114	0	55	0
13.....	21	M	1	12	100	64	48	1
14.....	27	F	1	11	34	0	69	0
15.....	18	F	1	13	538	0	34	0
16.....	19	F	0.5	11	10	2	33	1
17.....	21	F	0.5	11	36	11	33	4
18.....	22	F	1	5	17	0	23	1
19.....	26	F	1	6	45	0	20	1
20.....	18	F	1	6	7	0	20	0
21.....	33	M	1	3	158	18	15	8
22.....	19	M	1	3	46	3	10	2
23.....	15	M	1	3	13	4	10	0
24.....	21	M	1	5	24	2	8	1
25.....	33	M	1	5	11	2	8	1
26.....	30	M	1	5	20	3	8	4

* Treatment was given for two days, withheld for one week because of infection of the upper respiratory tract and then repeated for another two days.

Fever: This was usually slight, in 8 cases the temperature being not over 100 F.; in 6 cases it was between 100 and 101 F., and only in 2 cases did it reach 103 F. In almost all patients the fever started on the second day after initiation of treatment and lasted from one to six days (in only 1 case), the average duration being forty-eight hours. One patient, while having fever, complained of some shortness of

breath. Febrile patients had an accompanying tachycardia which followed the fever curve. No arrhythmia was noted and there were no changes in the blood pressure.

Headache: Slight headache, requiring no medication and disappearing spontaneously within a few hours, was experienced by 9 patients during the first or second day of treatment. In 3 cases the headache was severe enough to require treatment with acetysalicylic acid. Only in 3 did the headache last for two days.

General Malaise: General malaise occurred in 9 cases, in 4 of which it lasted for only one day and in another 4 for two days; in only 1 case did it last for three days. Only 1 patient was bedridden because of general malaise, which, however, lasted only one day. This patient had a high microfilarial count and received the highest dose (2 mg.). All but 1 of those complaining of general malaise of over one day's duration were receiving the highest doses.

Lumbar Ache: Five patients complained of slight lumbar ache, which lasted for one day; 2 had moderate ache lasting two and three days, respectively. All but 2 of these patients were receiving the highest dose.

Anorexia, Nausea and Vomiting: All 5 patients who complained of nausea also had anorexia. These complaints lasted for only one day in 3 cases, and in the rest for two days. Out of these 5 patients, 3 had accompanying vomiting, which however, was never severe and at the most occurred only twice daily.

Nodular Swellings: In 4 cases nodular swellings developed during treatment, or just after its completion. Two of these patients had been asymptomatic previously. Patient 9 of the table had received 2 mg. per kilogram of the drug three times a day for six days. On the fifth day of treatment he complained of slight pain in both testes and over the lower part of the abdomen. Two days later, nodular moderately tender swellings the size of a small olive were noted along both spermatic cords. There was evidence of an accompanying bilateral funiculitis and some inguinal lymphadenopathy, but without fever. The tenderness and swelling had disappeared almost completely by the third day, and check-up examinations three weeks later showed only a nontender, pea-sized nodule in the right cord. Patient 26 of the table complained on the second day of treatment of pain at the inner aspect of the left upper arm and by the following day was found to have a hard nodular tender swelling at this region with some accompanying axillary lymphadenitis. The swelling had almost completely disappeared within three days.

The other 2 patients had suffered filarial manifestations prior to start of treatment. Patient 15 of the table had been admitted to another hospital two months previously because of a febrile episode, of ten days' duration, with a tender nodular swelling in the inner aspect of the left upper thigh, diagnosed as an acute attack of filariasis, after smears had been found to be positive for microfilariae. On the fourth day after treatment here was begun, a tender nodular mass about the size of a walnut developed at the inner aspect of the same thigh and just above the site of the previous nodule. The patient had a temperature up to 103 F. The swelling gradually receded and became less tender until on discharge, twenty days later, it was the size of a small olive and nontender. Patient 24 of the table had been suffering for over a year from frequent attacks of tender inguinal adenitis and funiculitis accompanied by fever. Biopsy of a nodule from the right spermatic cord was reported as "hypertrophy and varicosity of lymphatics in spermatic cord with thrombosis and organization, cause undetermined." Microfilariae were found several times in the peripheral blood. Four days after start of treatment, he complained of pain in the right spermatic cord, which appeared tender, thickened and nodular. This was accompanied by fever. Within two days the tenderness and swelling had disappeared.

Aching Joints: Three patients complained of ache in the shoulders, knees and elbows. It was mild in 2 cases and moderately severe in the other, and never lasted over two days.

Weakness: Both patients who complained of weakness, lasting two and three days respectively, were receiving the highest dose of the drug.

Cutaneous Manifestations: One patient experienced an erythematous rash on the palms of the hands and the soles of the feet, which made its appearance on the third day of treatment and which cleared up entirely within three days. This patient was receiving the highest dose. Another patient had a pruritic papular rash over the anterolateral aspect of the left leg on the fourth day of treatment; this disappeared completely within twenty-four hours. This same patient complained of soreness of the mouth while having the rash.

Pain in Testes: One patient experienced pain over the testicular region on the fifth day of treatment, lasting one day, but this was not followed by noticeable swelling or nodules in this region.

It is apparent that the reactions occurred more often and were of a more marked degree in the patients who were receiving the highest dose. Fever and other related complaints first appeared, in most cases, by the second day of treatment, and by the end of forty-eight hours had disappeared spontaneously, never to recur, in spite of continuation of treatment. Previous toxicity studies on normal healthy adults [5] had shown that when a high dosage (8 mg. per kilogram of weight) was used the subjects complained of headache, general malaise, weakness, pains in the joints and anorexia. The other symptoms—that is, fever, tachycardia, tender nodular swellings, etc.—therefore, we consider to be related to the filaricidal action of the drug, probably developing on a foreign protein or allergic reaction basis.

Alterations in the Hematologic Picture.—Leukocytosis: There were no changes in the hematologic picture during or after therapy, except in the leukocytic series. The white blood cell count at time of admission in these cases ranged from 4,000 to 11,000, the average ranging from 5,000 to 7,000. In all but 1 case, the drug produced a definite leukocytosis. Usually, this first made its appearance by the second day of treatment and rapidly and progressively reached its peak by the fourth or fifth day. Henceforth, there was a tendency for the leukocytes progressively to decrease in number, the descent being at a much slower rate, and twenty or more days later the leukocytic picture still was higher than on admission. The white blood cell count, when at its highest, ranged from 5,000 to 24,000, the average at this time being from 9,000 to 11,000.

The degree of leukocytosis did not appear to be related to the degree of fever, to the initial microfilarial count or to the dosage given.

Eosinophilia: On admission, 24 patients had more than 5 per cent eosinophils; the eosinophils in most of them ranged from 6 to 10 per cent. The lowest eosinophil count was 1 per cent and the highest 32 per cent, the latter being observed in a patient having a massive hookworm infestation. Only 3 patients failed to show an increase in eosinophils. Twelve of the patients had over 20 per cent eosinophils while undergoing treatment. Six of these had over 30 per cent, the two highest figures recorded being 40 and 41 per cent, the last one in a patient having a very high initial microfilarial count (220). The eosinophilia did not appear to be related to the degree of fever or to the initial microfilarial count in the other cases. There was, however, a definite relation between the appearance of nodular swellings and eosinophilia, since in the 4 patients in whom nodular swellings developed the initial eosinophil count became three, four, six and eight times higher, respectively.

Blood Chemistry and Urinalysis: There were no changes recorded in the blood chemistry values or in the urine during treatment or thereafter.

Effect of the Drug on the Microfilariae.—The table shows that in all instances the microfilarial counts dropped markedly within forty-eight hours after beginning of treatment. Nine patients (34.6 per cent) had negative blood smears at the end of the forty-eight hour period, and the other 17 (65.4 per cent) had their counts markedly reduced.

In the follow-up blood examinations of all the patients, done on the eighth to the eighty-third day after treatment, microfilariae were not observed in 13 of the patients (50 per cent). The rest of the patients had extremely low microfilarial counts, to such an extent as to be definitely suggestive that their complete disappearance would eventually be demonstrated. Only 1 patient (no. 6 of the table), who initially had the second highest filarial count of this series (339), showed a relatively high count of 22 microfilariae on the seventy-fifth day after treatment. This patient had been receiving the drug for two days, when he contracted a severe infection of the upper respiratory tract, for which reason therapy was discontinued. One week later treatment was resumed and the drug was given for only two days. This is suggestive that for optimal results therapy must be given without interruption.

It is of considerable interest that the effect of the drug on the microfilarial count was practically the same regardless of dosage or length of treatment. Thus, when the extremely small dose of 0.5 mg. per kilogram of body weight was administered three times daily for five days, the microfilariae were reduced in numbers to the same extent as when the maximum dose was given for an equal period of time. This indicates that the parasite is extremely sensitive to the drug.

Effect of the Drug on the Adult Worm.—The appearance in 4 cases of tender nodular swellings and of localized lymphadenitis proximal to the swellings is suggestive of the death of the adult worm. Additional confirmatory evidence is afforded by the strong eosinophilic reaction observed in all 4 and by the occurrence in 3 of them of a sharper rise of temperature, which was also of longer duration than in the rest. Though sorely tempted, we refrained from removing any of such nodules, as experience has taught that they will be resorbed in most cases spontaneously, while surgical intervention may produce irreparable damage to the lymphatics.[7] We were further restrained by the fear that such intervention would have poor psychologic effect on the volunteer group of patients. Biopsies of similar nodules performed here and by other observers have frequently disclosed the presence in them of dead filarial worms.[8]

For definitive proof of an effect on the adult female worms, we have considered it advisable to observe the cases for a total period of at least one year. This is the approximate time necessary for maturation and parturition of worms which might have been inoculated shortly before the start of therapy. Should these patients remain without signs of infestation for that period, it might then be safely assumed that all adult worms had been destroyed or that the worms may have become sterile.

SUMMARY

Twenty-six persons harboring microfilariae of Wuchereria bancrofti in their blood were treated with 1-diethylcarbamyl-4-methylpiperazine hydrochloride ("hetrazan"). The drug was given by mouth, the doses varying from 0.5 to 2 mg. per kilogram of body weight, three times daily. All patients were hospitalized, and the period of treatment varied from three to twenty-two days.

No severe toxic reactions were observed in any of the patients. Some of the patients, particularly those who received the highest dosage, experienced fever and some accompanying symptoms of minor degree. These complaints occurred only during the first forty-eight hours of treatment. From then on the patients were symptom free regardless of the duration of treatment. In 4 cases tender nodular swellings developed at the extremities or spermatic cord with accompanying lymphadenitis.

In all instances the number of microfilariae was markedly reduced by the second day of treatment. In 9 patients (34.6 per cent) microfilariae were not observed at this stage of therapy. In 13 patients (50 per cent) microfilariae were not found on subsequent examinations done eight to eighty-three days after treatment. In 12 (75 per cent) of the 16 patients receiving 1 or 2 mg. per kilogram of body weight three times a day, for six days or longer, microfilariae were not found at the last examination. These findings suggest that the drug may have also acted on the adult worm. Further evidence of the action of the drug on the adult worm is suggested by the fact that some patients had nodular swellings as a result of treatment. These nodules may be the site of dead worms.

The results obtained so far indicate that 1-diethylcarbamyl-4-methylpiperazine hydrochloride, when administered orally, causes the rapid disappearance of microfilariae from the blood stream. Evidence also points to its favorable action on the adult worm.

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In view of the apparent highly specific effect in the individual case of filariasis, and in an effort to evaluate the preventive potentialities of the drug, these observations are being extended to hyperendemic groups in easily controlled institutions, such as orphan schools and asylums. Future trials will be correlated with the filarial infestation rate in the mosquito vector before and after mass treatment.

Clinical Notes, Suggestions and New Instruments

ACETYLSALICYLIC ACID POISONING

With a Report of a Fatal Case

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and
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Acetylsalicylic acid ("aspirin") poisoning appears to occur infrequently. This is evidenced by the fact that we were able to find reports of only 7 fatalities due to acetylsalicylic acid in the American literature,[1] 2 of which were due to hypersensitivity. Poisoning by this drug appears to be commoner in Europe, especially England, as indicated by the reports of Balazs [2] and numerous British authors.[3]

We wish to record another fatal case and to focus attention on the fact that acetylsalicylic acid poisoning may be overlooked because of its mimicry of other toxic states. This fact, plus the close similarity between acetylsalicylic acid and sodium salicylate, the latter now being used in massive doses intravenously for the treatment of rheumatic fever, as suggested by Coburn,[4] requires some caution in the use of these drugs.[5]

Space does not permit a full consideration of the pharmacologic, toxicologic and pathologic effects of "aspirin" in relation to its manner of absorption, distribution in the body, excretion, toxic effects on the central nervous system, cardiorespiratory system and gastrointestinal system and hepatic, renal and dermatologic manifestations, for which the reader is referred to Goodman and Gilman [6] and others.[5]

From the Medical Service of Mitchell Bernstein, M.D., Jewish Hospital, Philadelphia.

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REPORT OF A CASE

John K., aged 54, an electrician, first came under observation at 6:30 p. m. on June 24, 1946, when one of us (M. B.) was consulted because the patient was in coma. He had been well until three years before (1943), when severe occipital headaches developed. Hypertension was noted and subsequently 5 to 10 grains (0.3 to 0.6 Gm.) of acetylsalicylic acid was given daily to obtain relief of the headaches. There was no progressiveness of the symptoms until June 3, 1946, when the headaches increased in severity and duration. However, relief was now obtained by the use of 20 to 30 grains (1.33 to 2.0 Gm.) of acetylsalicylic acid.

According to the patient's wife and son, whose statements were reliable, the patient complained on June 23 of an excruciating headache, and between 9 p. m. and midnight of that night he consumed fifteen to twenty 5 grain tablets (5.0 to 6.6 Gm.) of acetylsalicylic acid. The headache apparently abated, and the patient presumably fell asleep. On the following morning, June 24, his family observed that the patient was confused and incoherent in speech. During a few lucid moments the patient complained of deafness and tinnitus in his left ear. However, restlessness and difficulty in breathing supervened, and despite various therapeutic measures by his physician, the patient became semistuporous and lapsed into coma.

On physical examination, when first observed, at 6:30 p. m. on June 24, the patient was in coma and was thrashing about the bed. His face was flushed and edematous. The conjunctivas were injected. Respiratory rate averaged 32 per minute. The lungs were filled with moist rales. The heart rate averaged 154 per minute and the heart sounds were distant. The blood pressure averaged 96 systolic and 60 diastolic.

The abdomen was normal except for many petechiae noted over the anterior abdominal wall. There were no striking abnormal neurologic signs noted. The rectal temperature was 98.3 F. The patient had not voided for twelve hours.

The laboratory work prior to admission to the hospital showed hemoglobin 104 per cent, red blood cells 5,110,000, and a white blood cell count of 14,600 per cubic millimeter of blood, with polymorphonuclear leukocytes 87 per cent, lymphocytes 12 per cent and monocytes 1 per cent; blood urea nitrogen was 25.3 mg. per hundred cubic centimeters. An electrocardiogram revealed left axis deviation and simple tachycardia. The P waves and T waves were prominent in the limb leads.

At 9:30 p. m. the patient was admitted to the Jewish Hospital, where his condition grew progressively worse. The temperature rose to 106 F. The blood pressure rose to 170 systolic and 90 diastolic. The pupils failed to respond to light and the eyes rotated upward and outward involuntarily. Moist rales persisted in the chest. Neurologic examination revealed generalized hyporeflexia, but no other pathologic reflexes were noted. Spinal puncture was performed and 10 cc. of clear fluid was obtained. The initial pressure was 220 mm.; the final pressure dropped to 110 mm. Examination of the spinal fluid showed 40 cells per cubic millimeter, mostly lymphocytes. Stained smear failed to show any micro-organisms.

Despite many therapeutic measures, including use of "thermo-rite" cooling apparatus, rapidly acting stimulation, intravenous administration of dextrose and administration of oxygen, the patient's temperature rose to 107 F. The blood pressure fell to 90 mm. systolic and 70 diastolic. Coma persisted, and at 11:15 p. m., one hour and forty-five minutes after being admitted to the hospital, the patient died.

Postmortem Examination.—Dr. Helen Ingelby, of the department of pathology, performed the autopsy in this case, ten hours after the patient's death. Deep cyanosis was observed over the head and shoulders, and small petechial areas in the left scapular region. The pleurae were studded with small pinpoint petechiae. The pericardium, when opened, contained about 20 cc. of clear fluid, and when the heart was raised, numerous

small subepicardial hemorrhages were seen on the posterior surface. Examination of the large vessels revealed many atheromatous plaques and marked arteriosclerosis. The heart weighed 430 Gm.; the left ventricular thickness was 1.2 to 2 cm.; the right ventricular thickness was 0.4 to 0.5 cm. The myocardium was pale and flabby and appeared parboiled; all the chambers were well dilated. The pulmonic ring measured 9.5 cm.; the aortic ring 8.0 cm. The mitral and tricuspid valves appeared normal. The right lung weighed 740 Gm.; the left lung, 600 Gm. Both were intensely congested, revealing a few petechiae just beneath the visceral pleura. The spleen was markedly congested, weighing 280 Gm. The right and left kidneys weighed 150 Gm. and 120 Gm. respectively. The capsules stripped easily, leaving a purple congested surface with scattered petechiae. The cut surface was cloudy and swollen and the normal markings were indistinct. Some inspissated purulent material was found in the upper calyx of the right pelvis. The stomach contained bile-stained material (a specimen was taken for chemical study) and presented numerous petechiae and a few submucous hemorrhages. The liver weighed 1,700 Gm. and was congested and mottled with yellow fatty patches. The pancreas and adrenal glands were slightly congested. The lymph nodes were normal. The brain weighed 1,500 Gm., its convolutions were small but firm. The arterial supply was sclerotic and the veins were congested. No petechiae were seen.

Microscopic Examination.—Sections taken from the anterior wall of the left ventricle showed pronounced fragmentation and swelling of the muscle fibers, separation of the longitudinal fibrils and some hypertrophy. Small areas of hemorrhages were seen in the pericardium.

Liver sections revealed intensely congested sinusoids, many large and small fat vacuoles, hydropic and fatty degeneration and beginning necrosis.

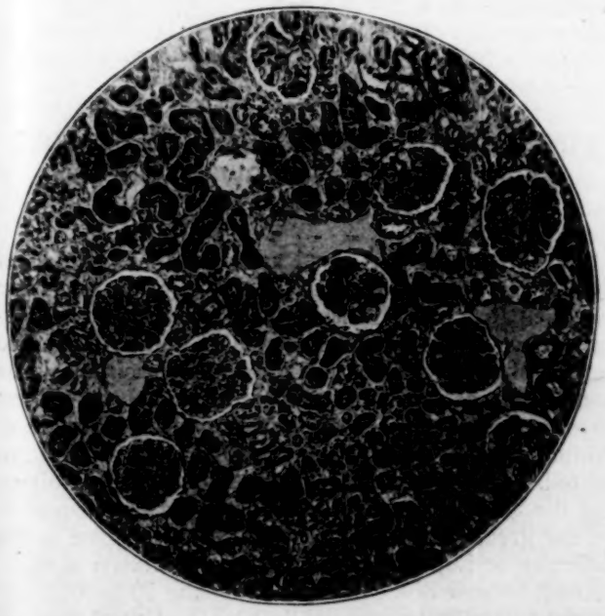

Fig. 1.—Illustrating renal congestion, glomerular degeneration and tubular degeneration especially of the proximal convoluted tubules. × approximately 82.

The lungs, microscopically, confirmed the gross evidence of congestion and showed many areas of focal necrosis with hemorrhage.

Kidney sections were studied in some detail and showed the most significant changes. In the best preserved glomeruli, the loops were dilated. Red cells and threadlike material were seen in them. Epithelial cells, both of Bowman's capsules and the covering loops, were scanty and showed evidence of degeneration. The endothelial cells were not increased and their nuclei stained diffusely. Some loops appeared to be entirely filled with amorphous material, and in some cases Bowman's capsules were filled with debris. The afferent tubules appeared somewhat contracted, and the walls appeared to be degenerated. The proximal convoluted tubules revealed almost complete

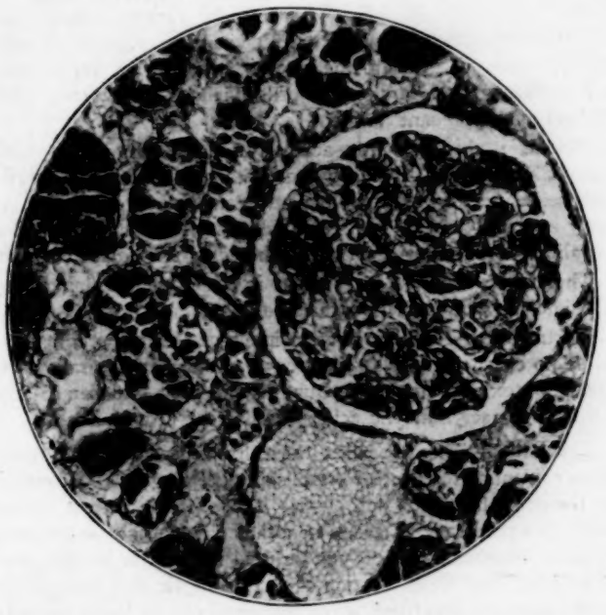

Fig. 2.—Illustrating renal congestion, glomerular degeneration and tubular degeneration, especially of the proximal convoluted tubules. × approximately 306.

degeneration of the epithelium. The cells were fused into a granular mass and in all of them was found beginning desquamation. In the distal convoluted tubules the lining cells were preserved, but the protoplasm was in a state of degeneration. Careful examination of the section led to the conclusion that some of these tubules and the ascending loop of Henle had disappeared and were replaced by areas of necrosis containing a few mononuclear inflammatory cells.

The capsule appeared thickened in several places, beneath which there were areas of degeneration and round cell infiltration. The interstitial tissues seemed to be increased, due in part to the dilatation of the interstitial capillaries as well as edema. In the cortex, pericapillary edema was also noted. Both glomeruli and interstitial vessels were engorged. The arterioles presented decided degeneration of their walls. There was extreme edema of the intima and media. A few small hemorrhages were seen.

The brain, studied by Dr. Nathaniel W. Winkelman, revealed cerebral atherosclerosis, cortical and subcortical degeneration, areas of necrosis (pallidum, temporal lobe) and fatty degeneration of the cells of the medulla.

The specimen of the stomach contents and postmortem blood were studied by Dr. Louis Gershenfeld, who made the following report: "Several methods of extraction and identification were made of both blood and stomach contents. In each instance high concentrations of 'aspirin' was found."

COMMENT

It is evident from the pathologic findings in our case, as well as in the fatal cases with necropsy reported by others, that many of the symptoms and signs of acetylsalicylic acid poisoning are the result of changes chiefly in the brain, kidneys and liver. The cerebral changes may result in a chain of symptoms varying from headache, dizziness, vertigo and tinnitus, down to stupor, coma and death. Hence in any given case the diagnosis of disease of the central nervous system or psychosis

may be assumed, whereas the underlying condition may in fact be due to acetylsalicylic acid poisoning.

The pathologic changes in the kidney likewise may mask the true nature of the disease in cases of acetylsalicylic acid poisoning, and the diagnosis may erroneously be considered as nephritis with occasional terminal renal acidosis.

The petechiae in the skin may simulate blood dyscrasias due to the hepatotoxic changes, as reported by various authors and us. It is interesting to note that Trendelenburg, cited by Schallmayer,[7] drew attention to the bleeding tendency of the mucosa and urged caution in the use of salicylates in patients with typhoid and pregnant women.

Metabolic changes with acidosis due to overdosage with acetylsalicylic acid often produce acetone odor on the breath, and hence the diagnosis of diabetic coma may be made. As early as 1882, Quinke[8] noted the similarity between the dyspnea in salicylate poisoning and that in the acidosis of diabetic coma.

The hyperpyrexia often present in "aspirin" poisoning may simulate an acute infectious disease.

Hartman[9] and others have pointed out that there appears to be no close relationship between the dosage of the salicylates and the toxic symptoms. Our patient took between 5 and 6.6 Gm. of acetylsalicylic acid; yet his case proved fatal.

Treatment.—The treatment naturally depends on the symptoms evident at the time of establishing the diagnosis. Omission of the drug, hydration and gastric lavage, if the patient is seen early, are necessary. Lavage is useless if hyperpnea supervenes. Sodium bicarbonate should not be used for gastric lavage, since it may increase the absorption of acetylsalicylic acid early in the acute stage.[10] Dextrose, given intravenously in large amounts, together with sodium r-lactate (Hartmann's solution), has been recommended by Barnett and others[10] in this country, and Williams and Panting[11] in England. Supportive treatment for cardiac failure and sponging for hyperpyrexia are necessary. To avoid the prothrombopenic effects of acetylsalicylic acid, vitamin K should be given.

SUMMARY

The use of acetylsalicylic acid ("aspirin"), sodium salicylate and other salicylate compounds has become widespread throughout the world. However, the acetylsalicylic acid tablet per se has been rarely thought of as a toxic agent. Acetylsalicylic acid evidently exerts its toxic effects primarily on the brain, liver and kidneys, but significant concentrations can be found in all tissues. A fatal case of acetylsalicylic acid poisoning following the ingestion, within a three hour period, of at least fifteen to twenty 5 grain tablets—5 to 6.6 Gm.—is reported, with observations at necropsy.

ADDENDUM.—Since the preparation of this paper an additional fatality due to an overdose of acetylsalicylic acid has been reported on the pediatric service of Dr. Robert Schless at the Jewish Hospital. This was a case of a 5 month old white boy who was given 2 Gm. of acetylsalicylic acid in a period of ten hours, and died in a state of acidosis and respiratory depression shortly after admission. The postmortem observations were similar to those in the case reported, characterized chiefly by petechiae and numerous hemorrhages.

1321 Spruce Street.

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Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

HOMOLOGOUS SERUM JAUNDICE

The American National Red Cross, in accordance with a decision of its Committee on Blood and Blood Derivatives of the Advisory Board on Health Services, has distributed to all the state health officers with a covering letter copies of a Report on the Incidence of Homologous Serum Jaundice Following the Use of Surplus Dried Plasma. To aid in the dissemination of this information to the members of the medical profession the Council has adopted for publication the committee's report and draws attention to the following letter, which is sent by the Red Cross to each state health officer:

"The Committee on Blood and Blood Derivatives of the American National Red Cross Advisory Board on Health Services has recently reviewed accumulated reports on the administration of surplus dried blood plasma. By unanimous decision the members recommended that a statement be sent out to each of the state health officers on the incidence of homologous serum jaundice following the administration of dried plasma. This Committee prepared such a statement, and two copies are attached. Copies have been sent also to the American Medical Association.

We believe this statement should be made available to every physician in your state.

Similar, but less complete, information on this subject was contained in Section 7 of a mimeographed brochure entitled 'Normal Human Dried Blood Plasma, Army-Navy Surplus' and dated Feb. 11, 1946, copies of which were sent to you last year with the initial shipment of surplus dried plasma.

Sincerely yours, G. FOARD MCGINNES, M.D.
Vice Chairman for Health Services."
AUSTIN SMITH, M.D., *Secretary.*

REPORT ON THE INCIDENCE OF HOMOLOGOUS SERUM JAUNDICE FOLLOWING THE USE OF SURPLUS DRIED PLASMA

The Committee on Blood and Blood Derivatives of the Advisory Board on Health Services of the American National Red Cross believes that the possibility of disease transmission by the injection of human blood and certain of its derivatives should be reemphasized to state and territorial departments of health and through them to practicing physicians within their jurisdiction. Although many diseases theoretically might be so transmitted, homologous serum hepatitis or jaundice following the administration of pooled plasma has proved to be the greatest practical problem; first, because of the difficulty or impossibility of detecting infective donors; second, because of the practice of pooling 10 to 50 bloods to reduce the isohemagglutinin titer, and third, because of the availability of dried plasma as a result of the distribution of surplus blood derivatives by the American Red Cross.

In the instructions for the use of normal human dried blood plasma, prepared under the direction of this

This report was distributed by the American National Red Cross, Aug. 15, 1947.

Prepared by the Committee on Blood and Blood Derivatives of the Advisory Board on Health Services of the American National Red Cross. The committee consists of Dr. Charles A. Janeway, chairman, Dr. Elmer L. DeGowin, Dr. Charles A. Doan, Dr. Isidor S. Ravdin, Dr. Robert F. Loeb and Dr. Edwin J. Cohn.

committee and sent out to departments of health at the time of the initial distribution of the surplus plasma received by the American Red Cross from the Army and the Navy, attention was called to the possibility of virus transmission under the section headed Adverse Reactions from the Administration of Human Plasma. It was emphasized that jaundice might develop from one to four months after administration if a particular lot was contaminated with the virus of homologous serum jaundice.

The committee has reconsidered the advisability of distributing this plasma on several occasions but has always felt that, in view of the lack of availability of whole blood or other relatively safe blood derivatives in many parts of the country, plasma would save many more lives than would be lost from the occasional severe case of hepatitis which might result from its use. At the same time, steps were taken to determine as accurately as possible the real risk to the patient from the use of the surplus plasma being distributed by the American Red Cross. Studies were initiated in several states. One of these carried out by the New York State Department of Health has now progressed to the point where sufficient figures are available for tentative conclusions. In 649 patients followed for six months after transfusions of this plasma, 29 cases of hepatitis have been observed, while there have been no suggestive symptoms of hepatitis in 1,597 household contacts of these 649 patients, thus suggesting that the disease actually was homologous serum jaundice and not epidemic infectious hepatitis. This figure of 4.5 per cent thus represents the probable incidence of the disease in recipients of random lots. It is lower than the 7.3 per cent incidence reported in approximately 1,000 patients receiving pooled serum prepared by the Northwest London Blood Supply Depot in Great Britain, but the size of their pools was somewhat larger.

There is every reason to believe that whole blood, fresh or frozen plasma prepared by hospital blood banks, or commercial plasma, as well as convalescent serum, may all transmit the same agent, but the factor of pooling greatly increases the probability factor with plasma. On the other hand, there is good evidence that the two most widely used products of plasma fractionation are relatively free from this risk. In the case of immune serum globulin (normal human serum gamma globulin) distributed by the American Red Cross for the prophylaxis of measles, follow-up studies have been made on approximately 1,900 patients. Only 1 case of jaundice occurred within six months of injection, and in that case 74 other children received the same lot without exhibiting any evidence of hepatitis. In the case of normal human serum albumin (salt poor) a heat treatment used in its routine preparation has been shown to inactivate a strain of homologous serum hepatitis virus. Various promising studies on methods for inactivation of this virus in plasma are under way, but nothing has been perfected thus far. Finally there is evidence that the disease may be transmitted from patient to patient in hospitals by the use of improperly sterilized or unsterilized syringes and needles.

This committee still does not feel that plasma should be withdrawn from distribution. However, it does believe that all practicing physicians should be reminded of the potential risk to the patient in the administration of pooled plasma and urged to restrict its use to those instances, chiefly serious emergencies, when its use is clearly indicated and when safer agents such as whole blood or serum albumin are not available. Moreover, physicians who see patients with hepatitis should make a habit of inquiring about their injections with blood or its derivatives during the preceding six months and of reporting such cases to the state or territorial department of health.

Patients who have been hospitalized within six months and particularly those who have received injections of human blood, plasma or serum during that period should not serve as blood donors even though they may feel perfectly well. Furthermore, potential blood donors should be rejected if a history of jaundice among members of their household within a period of the past six months is obtained.

Council on Physical Medicine

COUNCIL ON PHYSICAL MEDICINE

The Council on Physical Medicine has authorized publication of the following report.

The Council wishes to express its appreciation for the valuable assistance rendered in the preparation of this report by Drs. Edward L. Compere, Charles F. Mc Khann and James L. Wilson.

HOWARD A. CARTER, *Secretary.*

TENTATIVE REQUIREMENTS FOR ACCEPTANCE OF RESPIRATORS OF THE CUIRASS TYPE

1. The cuirass type of respirator shall be tried on paralyzed patients who are being treated in respirators of the tank type, and a report shall be prepared by a qualified physician for the Council on Physical Medicine. A respirator of the cuirass type should produce adequate artificial respiration under the aforementioned conditions without undue chafing of the patient's skin, with comfort and relaxation and without fatigue.

2. The cuirass type of respirator shall be so constructed that it can be applied to a patient without trauma and by persons relatively unskilled in its use in a minimum of two minutes.

3. The cuirass type of respirator shall be so constructed that it will fit all sizes of patients, children as well as adults. The cuirasses shall be available in sets of sufficient sizes to accommodate the vast majority of patients likely to be treated in them.

4. The cuirasses shall be constructed so that any ordinary motion of the patient does not change the pressure by more than a few centimeters of water when the mechanism is in operation.

5. The pump of the cuirass type of respirator shall be adequate to produce 20 centimeters of negative pressure inside the cuirass in spite of rather large leaks which may occur at the junction of the cuirass and the patient.

6. The pressure indicator of the cuirass type of respirator shall be on the cuirass or shall be attached to the end of the connecting tubing near the cuirass and not on the pump.

7. The cuirass type of respirator shall be sold with a clear statement regarding the limitations of its use.

8. The methods of merchandising and the acceptability of advertising shall meet the rules of the Council on Physical Medicine.

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SATURDAY, NOVEMBER 15, 1947

PULMONARY CALCIFICATIONS

Additional evidence is now available to support the concept of etiologic relation between nontuberculous benign pulmonary calcifications and a benign form of histoplasmosis. Zwerling and Palmer [1] report a study of pulmonary calcifications made as a cooperative project by the National Tuberculosis Association, the United States Public Health Service and a number of schools of nursing. Histoplasmin and tuberculin skin tests and roentgenograms were available for 6,199 student nurses in eight large cities. The incidence of calcification closely paralleled a positive reaction to histoplasmin; such a parallel with positive tuberculin reactions was not apparent in the material studied. Pulmonary calcification was found in 698 nurses, of whom 494 were histoplasmin positive, 109 had positive reactions to both tuberculin and histoplasmin, 57 were tuberculin positive and 38 had negative reactions to both histoplasmin and tuberculin. Geographically the incidence of calcifications varied widely. Four times as many student nurses in Kansas City, Mo., showed calcification as in Philadelphia, and more than four times as many were sensitive to histoplasmin. An attempt was made to differentiate between calcification presumably due to tuberculosis and that presumably due to histoplasmosis, but any characteristic feature of the lesions was not noted which would be of value in determining the etiologic factor. Occasionally, instances of scattered multiple bilateral calcification, including the miliary type, were seen. Since it was impossible to distinguish between the calcifications, the authors infer that the roentgenographic appearance of the benign form of histoplasmosis can resemble tuberculosis during the active phase of the infection. The recovery of the tubercle bacillus and consideration of the tuberculin reaction were therefore considered essential for the final diagnosis of pulmonary tuberculosis. Infection with the fungus Histoplasma capsulatum probably is widespread and, although usually benign, may be responsible for most instances of scattered multiple bilateral calcifications.

1. Zwerling, H. B., and Palmer, C. E.: Pulmonary Calcification: Roentgenographic Observations in Relation to Histoplasmin and Tuberculin Reactions, Radiology, **47**: 59 (July) 1946.

From a study of 1,457 American Indian children following tuberculous infection, High and Zwerling [2] concluded that the frequency with which calcification develops in tuberculosis varies directly with the age at which the tuberculous lesions begin. Calcified pulmonary foci were found most frequently during the second and third years after the lesion was first observed. In the youngest age group (under 5 years of age) calcification followed tuberculosis in 76.5 per cent of the cases. The rate declined progressively in older children, and calcification was present in only 2.4 per cent of the cases in which the onset of tuberculosis was between the ages of 15 and 19.

High, Zwerling and Furcolow [3] reviewed 113 cases of disseminated pulmonary calcification collected from various sources, mostly midwestern school children and student nurses, in whom at least five calcareous deposits were noted in each lung field. Of the 108 patients who received tests with tuberculin and histoplasmin, none reacted to tuberculin alone, but 93.5 per cent of them reacted to histoplasmin; only 4 did not react to histoplasmin.

From the Fels Research Institute, Sontag and Allen [4] report a study of 200 normal southwestern Ohio children. Chest roentgenograms were made on most of them one month after birth and every six months thereafter for the first two years and at yearly intervals from then on. They came from all economic levels and from all types of homes. The serial roentgenograms made possible not only a diagnosis of the presence or absence of pulmonary calcifications but a study also of the progressive changes in the lung from the time of the initial lesion throughout the period of calcification. The children were physically examined every six months and were tested intradermally with purified protein derivative of tuberculin and histoplasmin; if both tests were negative when pulmonary calcifications were present, the child was tested with blastomycin and with extract of Haplosporangium parvum. Of 170 children 1 year of age or older, 15.3 per cent reacted to tuberculin and 44.7 per cent to histoplasmin. Thirty-three of the 103 with pulmonary calcifications reacted to neither tuberculin nor histoplasmin. Two of the 33 reacted positively to blastomycin and to haplosporangin. The infection which produced these calcifications certainly occurs often at an early age. In 9 cases in this series the soft tissue changes were present as early as 10½ months of age. The calcification itself often appeared early; it was apparent in 9 children in the first twenty-four months of life and in 45 at or before the age of 4 years. These studies strongly support the hypothesis that pulmonary calcifications very frequently are caused by whatever agent produces sensitivity to histoplasmin, at least in some parts of the United States.

2. High, R. H., and Zwerling, H. B.: Variation with Age in Frequency of Tuberculous Pulmonary Calcification, Pub. Health Rep. **61**: 1769 (Dec. 6) 1946.

3. High, R. H.; Zwerling, H. B., and Furcolow, M. L.: Disseminated Pulmonary Calcification, Pub. Health Rep. **62**: 20 (Jan. 3) 1947.

4. Sontag, L. W., and Allen, J. E.: Lung Calcifications and Histoplasmin-Tuberculin Skin Sensitivity, J. Pediat. **30**: 657 (June) 1947.

CYSTIC FIBROSIS OF THE PANCREAS

Passini in 1919 was apparently the first to describe typical findings of cystic fibrosis of the pancreas in an infant who had had abnormal stools since birth and who died of bronchopneumonia at the age of 9 months. Severe respiratory infection in infants associated with a celiac-like picture was described by Garrod and Hurtley in 1913. Andersen [1] in 1938 correlated the pancreatic changes with the development of steatorrhea and pneumonia and established cystic fibrosis of the pancreas as a definite clinical entity. She collected 27 cases from literature and 22 cases from records of necropsies at the Babies' Hospital in New York. Analysis of these cases revealed three distinct groups: 1. In 5 cases death occurred in the first week of life from some form of intestinal obstruction. In 2 cases the obstruction was due to so-called meconium ileus. 2. Nineteen infants died between the ages of 1 week and 6 months of purulent bronchitis, bronchiectasis or bronchopneumonia. Thirteen of these patients presented feeding problems the essential features of which were hunger, failure to gain on an adequate diet in the absence of vomiting or diarrhea, and the presence of foul, bulky stools. 3. Twenty-five children died of pulmonary infections between the ages of 6 months and 14½ years. All these patients presented symptoms which were recognized as preceliac in type and which led to the diagnosis of celiac disease.

The chief pathologic changes were as follows: 1. The acinar tissue of the pancreas was replaced by epithelium-lined cysts containing concretions and surrounded by fibrous tissue. The islands of Langerhans were intact. 2. The lungs showed bronchitis, bronchiectasis, pulmonary abscesses arising in the bronchi, lobular pneumonia or any combination of these. Staphylococcus aureus was the usual bacteriologic agent. 3. There was evidence of vitamin A deficiency in many of the patients who died before the age of 1 year. 4. Atresia of the small intestine, of the cystic duct or of the pancreatic duct was frequently noted. The cause of the pancreatic lesion was unknown. Sixty-seven per cent of the patients were girls. There were 3 proved instances of familial occurrence. The racial and geographic distribution was wide.

The clinical syndrome described was comparable to that which follows ligation of the pancreatic duct in dogs (Ivy; Greenberg). Under favorable circumstances the symptoms of the condition sometimes disappeared temporarily (for a period of several months) under the influence of appropriate dietary treatment. The frequent occurrence of vitamin A deficiency was probably due to failure of absorption of this vitamin. It is suggested that the pulmonary infection was possibly secondary to vitamin A deficiency. Osteoporosis was frequent and can be interpreted as the result of inadequate absorption of either vitamin D or calcium or both. The clinical picture of celiac disease may be presented either by patients with pancreatic insufficiency who survived the first year of life or by patients with chronic, recurrent diarrhea who have no essential abnormalities in the pancreas. Andersen stresses that the two groups of cases can be differentiated with certainty only by examination of the duodenal contents for enzymes or by microscopic examination of the pancreas. Celiac disease, she believes, is a clinical syndrome, not a disease entity, which may be produced by two or more disease entities, one of which is cystic fibrosis of the pancreas.

The changes in the pancreas, in Andersen's opinion, may be interpreted as the result of the obstruction of the small or large pancreatic ducts. The ducts of Wirsung and Santorini were atresic in some cases but not in others. The stenosis or atresia may possibly have been the result rather than the cause of the pancreatic fibrosis. In the majority of cases the smaller ducts were the primary site of the obstruction. That the lesion may be congenital is proved by the presence of extensive fibrosis of the pancreas in the 5 infants who died in the first week of life. In a high percentage of cases there were congenital abnormalities in addition to those in the pancreas. These abnormalities were nearly all atresia or stenosis of epithelium-lined passages such as the intestine, the cystic duct or the ureter. One gains the impression that there was a general tendency to atresia of ducts. One must therefore consider the possible causes of an obstruction of the smaller pancreatic ducts which occurs in fetal life in association with atresia or stenosis of other epithelium-lined passages and sometimes appears in several siblings of the same family. Three etiologic agents fulfil these requirements: (1) congenital malformation, (2) inflammation of the pancreas during fetal life and (3) vitamin A deficiency during life. Andersen suggests that the pancreatic lesion prevents the normal digestion and absorption of fats, the poor absorption of fats results in poor absorption of the fat soluble vitamin A, and the epithelial metaplasia, bronchiectasis and bronchopneumonia are consequences of vitamin A deficiency.

Blackfan and Wolbach [2] suggested that the lesions of the pancreas might be due to thickening of acinar secretions. This material might cause obstruction, with resulting hypofunction of the secretory mechanism. Farber [3] in his postmortem studies of patients with pancreatic insufficiency performed in the department of pathology at the Children's Hospital, Boston, found pathologic lesions in the lungs, the upper respiratory tract, the liver, the gallbladder and the upper alimentary tract. These lesions were essentially the same as those in the pancreas. They appeared to depend on the primary alteration in the character of secretions within

1. Andersen, Dorothy H.: Cystic Fibrosis of the Pancreas and Its Relation to Celiac Disease, Am. J. Dis. Child. **56**: 344 (Aug.) 1938.

2. Blackfan, K. D., and Wolbach, S. B.: Vitamin A Deficiency in Infants: A Clinical and Pathologic Study, J. Pediat. **3**: 679 (Nov.) 1933.

3. Farber, Sidney: Pancreatic Function and Disease in Early Life, Arch. Path. **37**: 238 (April) 1944.

glandular structures, leading to obstruction and loss of function. He believes that what has been called cystic fibrosis of the pancreas is really a systemic disease with a variety of clinical appearances, the occurrence of which depends on when the specific changes occur and what organisms are affected.

The striking increase in the number of cases of cystic fibrosis of the pancreas being reported in current literature suggests that its incidence is not as rare as was formerly believed. The consensus is that it is a definite clinical entity even though its pathogenesis has not been definitely elucidated.

Current Comment

CHEESE AND ITS RELATION TO DISEASE

Hundreds of millions of pounds of cheese [1] are produced annually in the United States; the per capita consumption is placed conservatively at more than seven pounds per person per year; its wholesomeness depends on the quality of the milk from which the cheese is made and the sanitary conditions from the farm to consumption. Important factors are the health and environment of the milk-producing animals and the human beings who participate in the production and distribution of cheese. Apparently public health agencies have given insufficient attention to the sanitary safeguards necessary to insure a safe product. Fabian [2] has compiled a list of fifty-nine epidemics of disease traced to cheese since 1883. These epidemics caused 2,904 cases of illness and 117 deaths. Probably still more outbreaks occurred, as a thorough search of the foreign literature has not been made. The most frequently reported disease was food poisoning, which accounted for 61 per cent of the epidemics; typhoid fever accounted for 27 per cent of the epidemics and for 97.4 per cent of the total number of deaths or 1 death for approximately 12 cases of typhoid. In contrast to the high mortality for typhoid, none of the 1,389 cases of food poisoning was fatal, indicating that the pathogenic organisms did not remain viable in cheese long enough to produce enough toxin to cause death. The most recent typhoid epidemic in Fabian's list occurred early in 1946 at Cornwall, Ontario, Canada. Nineteen cases in this outbreak were traced to cheese from a factory which obtained milk from a farm on which a typhoid carrier lived. A study of these epidemics showed that the cheese generally was made from raw milk and that it had been sold too soon after manufacture. Experiments on the longevity of bacteria in cheese showed that the pathogens die out more quickly when the cheese is aged at high rather than at low temperature. Fabian concludes that if all milk and cream used in the manufacture of cheese were pasteurized and the cheese aged at the higher temperatures, epidemics of infectious disease resulting from the consumption of cheese would not occur. Epidemics have not been traced to Swiss cheese, the manufacture of which requires heating the milk to a higher temperature than in making Cheddar cheese; however, Swiss cheese apparently cannot be prepared from pasteurized milk. While efforts toward requiring pasteurization in making cheese have been made for many years, Fabian says that cheese makers have resisted pasteurization because it requires a somewhat different technic. The Dairy Division of the U. S. Department of Agriculture has demonstrated, however, that it is possible to make high quality cheese more uniform in flavor from pasteurized milk; also that by using a good grade of pasteurized milk and cream and adding a starter, it is possible to age the cheese at a much higher temperature and thus reduce the aging period by at least 50 per cent. The pasteurized milk method, when properly used, will kill all asporogenic bacteria which have been responsible for epidemics. Likewise, a higher temperature for the ripening process will help kill pathogens that have escaped pasteurization or got into the cheese after pasteurization. The organisms most commonly associated with cheese-borne infection are members of the Salmonella group, the Staphylococci, the Brucella group and the Clostridium botulinum. Only seven states—Alabama, California, Colorado, Illinois, Indiana, New Jersey and New York—and Canada require that cheese be made from pasteurized milk and cream or be held in storage for periods varying from sixty to one hundred and twenty days in lieu of pasteurization. The sixty day holding period is considered too short, especially if cheese is held at a temperature of 40 to 50 F. A ninety day holding period is preferable, and one of one hundred and twenty days is still better.

1. Newer Knowledge of Cheese, A Reference Book, Chicago, National Dairy Council, 1947.
2. Fabian, F. W.: Cheese and Its Relation to Disease, Am. J. Pub. Health **37**: 987 (Aug.) 1947.

CARBOHYDRATE CALORIES

When free choice of foods is permitted, the appetites of experimental animals are generally responsive to nutritional need. Thus a complete protein is selected over one lacking in essential amino acid; a salt mixture containing calcium is selected by parathyroidectomized animals, and extremely small concentrations of sodium chloride can be detected by rats after adrenalectomy. While it has long been known that a drop in environmental temperature stimulates an increase in the consumption of energy-yielding food, a recent study by Donhoffer and Vonotzky [1] has shown that the preferred source of calories changes when the temperature is altered; whereas at room temperature mice consumed a food rich in fat, at 10 to 14 C. not only was the energy intake greater but there was a shift to a diet rich in carbohydrate. Increase to 29 to 33 C. in the environmental temperature caused a drop in the total calories consumed and a shift away from the carbohydrate food. A similar preferential use of carbohydrate was shown after the administration of thyrotoxin. These observations support the well known concept of the preference for carbohydrate in muscle activity which frequently is confused with the demand for fat because of the satiety value of the latter.

1. Donhoffer, S., and Vonotzky, J.: Am. J. Physiol. **150**: 329-334 (Aug.) 1947.

ORGANIZATION SECTION

Official Notes

A. M. A. MEDICAL FILMS LOANED TO MEXICO

Through a special arrangement with the State Department, forty-three motion pictures from the American Medical Association Film Library were loaned to Mexico during the month of August. In that short period the films were shown to more than 3,500 individual physicians and students in nine institutions, including the National University School of Medicine and the Mexican Military Medical School. Members of the teaching staff worked long hours preparing lectures in Spanish, which were given at the various motion picture demonstrations.

The following is an excerpt from a letter sent to the American Medical Association by the First Secretary of the American Embassy in Mexico:

The exhibition of these films has made medical history in Mexico. . . . Again I want to thank you and your associates for your cooperation in making these films available in Mexico. As you undoubtedly know, there is a growing respect and admiration for American science and medicine among the leaders in these fields in Mexico. Your contribution of the films has done much to stimulate the already extensive interest in United States medicine. . . . Many doctors and students have asked for your address in order that they may write you directly to express their appreciation to the American Medical Association.

Washington Letter

(From a Special Correspondent)

Nov. 13, 1947.

Penicillin Shortage Reported

Dr. Henry Welch, Penicillin Division, Food and Drug Administration, reported that a nationwide shortage of penicillin has reached "uncomfortable" rather than serious proportions. He predicted that the shortage would become worse with the increase in colds and winter infections. The shortage is so urgent, he said, that drug firms get certification for supplies by telephone after the minimum four day tests so that supplies can be speeded to them. Short supply was blamed on increasing demand and larger dosages used by army-trained physicians, as well as seasonal ailments.

Association of American Medical Colleges

Dr. Walter A. Bloedorn of George Washington University Medical School here, was elected president of the Association of American Medical Colleges at the fifty-eighth annual convention in Sun Valley, Idaho. Other officers are Dr. J. Roscoe Miller, Northwestern University, Chicago, president-elect; Dr. George P. Berry, Rochester University, Rochester, N. Y., vice president; Dr. Fred C. Zapffe, Chicago, secretary; Dr. A. C. Bachmeyer, University of Chicago, treasurer, and Dr. L. R. Chandler, Stanford University, and Dr. Ward Danley, University of Colorado, members of the executive council.

Cooperation Pledged by Consultants

More than a hundred Army medical consultants, who met here for the second annual convention of the Society of U. S. Medical Consultants of World War II, pledged cooperation between civilian and Army doctors to assure the American soldier "the best medical care in the world." Army Secretary Royall reported that improved medical and surgical technic had given this country's casualties a better chance to recover. Dr. Walter Bauer, Massachusetts General Hospital, Boston, is president.

Tuberculosis Control Among Indian Babies

The Office of Indian Affairs reported that it has obtained "significant" results in the control of tuberculosis by vaccinating newborn babies. All babies born in Indian Service hospitals will be vaccinated a few days after birth. Since 1935, of 1,583 persons vaccinated, only 6 have died of tuberculosis. Of 1,460 not vaccinated, 52 died.

Federal Medical Care for Migrants

Dr. George C. Ruhland, District of Columbia health officer, has asked Surgeon General Thomas Parran of the U. S. Public Health Service for a plan whereby the federal government would "take responsibility for those migrant sick who are without state residence status." Dr. Ruhland proposed that action be taken in the next session of Congress to help migrants requiring institutional medical care who have lost residence status elsewhere.

Warning Against Indiscriminate Use of Sex Hormones

The Federal Trade Commission issued warnings to the public here against "indiscriminate use of male and female sex hormone preparations," cautioning that they can be dangerous if taken without a physician's advice. The warning was contained in an order to M. A. Clemens of Los Angeles to stop advertising hormone drugs unless ads stated that unsupervised use may cause serious injury.

Coming Medical Meetings

American Academy of Allergy, St. Louis, Hotel Jefferson, Dec. 15-17. Dr. Theodore L. Squier, 425 E. Wisconsin Ave., Milwaukee 2, Secretary.

American Academy of Dermatology and Syphilology, Chicago, Palmer House, Dec. 7-11. Dr. Earl D. Osborne, 471 Delaware Ave., Buffalo, N. Y., Secretary.

American Academy of Pediatrics, Dallas, Texas, Dec. 8-11. Dr. Clifford G. Grulee, 636 Church St., Evanston, Ill., Secretary.

American Association of Railway Surgeons, Chicago, Nov. 23-25. Dr. Raymond B. Kepner, 547 West Jackson Boulevard, Chicago 6, Secretary.

American Society of Anesthesiologists, New York, Hotel New Yorker, Dec. 4-5. Dr. Curtiss B. Hickcox, 745 Fifth Ave., Room 1503, New York 22, Secretary.

American Society of Tropical Medicine, Atlanta, Ga., Dec. 2-4. Dr. Norman H. Topping, National Institute of Health, Bethesda 14, Md., Secretary.

Post Graduate Medical Assembly of South Texas, Houston, Texas, Coliseum, Dec. 1-3. Dr. E. Trowbridge Wolf, 229 Medical Arts Bldg., Houston, Texas, Secretary.

Puerto Rico, Medical Association of, San Juan, Dec. 10-14. Dr. Jeramfel Cordero, Box 3866, Santurce, Secretary.

Radiological Society of North America, Boston, Nov. 30-Dec. 5. Dr. Donald S. Childs, 607 Medical Arts Bldg., Syracuse 2, N. Y., Secretary.

Seaboard Medical Association of Virginia and North Carolina, Virginia Beach, Va., Dec. 2-5. Dr. Clarence Porter Jones, 3117 West Ave., Newport News, Va., Secretary.

Society of Surgeons of New Jersey, New Brunswick, Nov. 19. Dr. Walter B. Mount, 21 Plymouth St., Montclair, Secretary.

Southern Medical Association, Baltimore, Nov. 24-27. Mr. C. P. Loranz, Empire Bldg., Birmingham 3, Ala., Secretary.

Southern Surgical Association, Hollywood, Fla., Dec. 9-11. Dr. Alfred Blalock, Johns Hopkins Hospital, Baltimore 5, Secretary.

Western Surgical Association, Colorado Springs, Broadmoor Hotel, Dec. 4-6. Dr. Warren H. Cole, 4853 West Polk St., Chicago 12, Secretary.

GOVERNMENT SERVICES

ARMY

AWARD FOR SERVICE TO SAFETY

The National Safety Council has given its Award for Honor for distinguished service to safety to the Department of the Army in recognition of a reduction of 36 per cent in the Army accident rate in 1946 over the preceding year. The award consisting of a certificate and pennant was made by the president of National Safety Council, Mr. Ned Dearborn of Chicago, to the Secretary of the Army, Kenneth C. Royall, in a ceremony in the latter's office in the Pentagon, Washington, D. C.

TEXAS SPONSORS FIRST MEDICAL AFFILIATED UNIT

The medical branch of the University of Texas at Galveston is the first institution to become a member of the Army Medical Department's postwar affiliation program, the surgeon general's office has announced. The school has agreed to sponsor a thousand bed general hospital in this postwar program. Additional units from other leading medical schools and hospitals throughout the country will be activated this year. The professional members of these units will be drawn from the faculties and staffs of the schools and hospitals which sponsor them. The personnel will be trained in Army methods and procedures so that in the event of mobilization these units will be prepared with the minimum of delay.

In World War II there were seventy-three affiliated units, comprising general, evacuation and portable surgical hospitals, which were brought into the service. The Medical Branch of the University of Texas sponsored a general hospital—the 127th—in World War II which performed outstanding service in the European Theater.

ADDITIONAL LIBRARY CONSULTANTS

The Surgeon General has recently appointed the following additional honorary consultants to the Army Medical Library: Dr. John E. Gordon, professor of epidemiology, Harvard School of Public Health, Boston; Major Gen. Norman T. Kirk, U. S. Army retired, former Surgeon General; Tracy S. Voorhees, LL.D., special assistant to the Secretary of the Army.

After more than ten years' service with the Army Medical Library Mr. Ignatius McGuire resigned October 31. Mr. McGuire has been editor of the *Current List of Medical Literature* since it was first published in 1945.

Dr. Atherton Seidell, an honorary consultant, has returned from Paris, France, where he has been organizing the microfilm service in the libraries of the Faculties of Medicine, University of Paris, and of the Pasteur Institute. Dr. Seidell believes that the use of microfilm as an extension of lending services of medical libraries will develop rapidly in France.

ELIMINATE PSYCHOMOTOR TESTS FOR AIR FORCE CADETS

The Department of the Air Force announces that in order to obtain the 3,000 qualified men needed to fill flying classes at Randolph Field, Texas, next year, the aviation cadet procurement is eliminating the costly and difficult to administer psychomotor tests and replacing them with intensified qualifying aptitude tests, a rigid physical examination and a morals and character interview by a board of officers. In this change no flying safety precautions will be lost, since the abandoned tests had not measured flying performance but had gaged learning capacity only. Cadets who do not have Army commissions and who complete their flight training and are commissioned as second lieutenants, Air Force Reserve, have an opportunity to compete for regular commissions and permanent grades in the Air Force. Details and application forms can be obtained from any recruiting office or Air Force installation.

PERSONAL

Col. Karl R. Lundeberg, formerly chief of the Preventive Medicine Division, Surgeon General's Office, has been assigned to the Panama Canal Department, and Lieut. Col. Arthur P. Long, formerly deputy chief of the Preventive Medicine Division, has been assigned to the Student Detachment, Headquarters, Military District of Washington.

Lieut. Irvin E. Liener has been assigned to the staff of the Quartermaster Food and Container Institute for the Armed Forces, Chicago, and will engage in nutritional studies of military rations. He has a master's degree in food technology from the Massachusetts Institute of Technology and served three years overseas in the recent war. On completion of active duty he will return to the University of Southern California to complete his studies for a Ph.D. degree in biochemistry and nutrition.

ARMY AWARDS AND COMMENDATIONS

Colonel Joseph Haas

The Legion of Merit has been awarded to Col. Joseph Haas, M. C., U. S. Army, of New York. The citation read as follows: For exceptionally meritorious conduct in the performance of outstanding services as commanding officer, 120th Station Hospital, from Sept. 16, 1942 to Aug. 21, 1945. He worked long hours under the most adverse conditions to establish a unit which consistently rendered outstanding medical services in an exceptionally efficient manner. His diligent application to his command and his devotion to duty resulted in an installation which was conspicuously superior and a recognized model for units throughout the theater. His conscientious and sincere efforts contributed in no small measure to the success of operations and served to reflect the highest credit on himself and the United States Army. Colonel Haas has also been awarded the Bronze Star Medal for service with the 120th Station Hospital in the European Theater. Dr. Haas graduated from Fordham University School of Medicine in 1917 and entered military service in July 1942.

Colonel A. Stephens Graham

The Legion of Merit has been awarded to Col. A. Stephens Graham, formerly M. C., A. U. S., of Richmond, Va. The citation read as follows: He performed exceptionally meritorious service as Surgical Consultant, India-Burma and China theaters, from Jan. 28 to Sept. 24, 1945. Colonel Graham during this time made periodic visits to all medical installations in both theaters, regardless of their location. With no thought to his own comfort or personal safety, he spent long periods in frontline surgical stations. Because of his surgical training and capabilities and his pleasing personality, he was able to elevate the standards of surgical procedures in both theaters. His untiring efforts and superior accomplishments reflect the highest credit on himself and the Army of the United States. Dr. Graham graduated from the University of Virginia Department of Medicine in 1925 and entered the service in March 1942.

Lieutenant Colonel Charles E. Kossmann

The Legion of Merit has been awarded to Lieut. Col. Charles E. Kossmann, M. C., A. U. S., of New York. The citation reads as follows: As chief, Department of Aviation Medicine, and as district consultant in internal medicine, Army Air Forces School of Aviation Medicine, from December 1941 to September 1945, he directed the production of the "Flight Surgeon's Handbook," a text of inestimable value to flight surgeons and aviation medical examiners. His wealth of professional knowledge and outstanding ability reflect great credit on himself and the Army Air Forces. Dr. Kossmann has also been awarded the Army Commendation Ribbon. He graduated from New York University College of Medicine in 1931 and entered the military service in March 1941.

NAVY

CAPTAIN DOWLING JOINS STAFF OF RED CROSS

Capt. George B. Dowling, recently retired after thirty years' service in the Medical Corps of the Navy, has been appointed Deputy Administrator to Vice Admiral Ross T. McIntire, who heads the National Whole Blood Program for the American Red Cross. Captain Dowling is a graduate of George Washington University Medical School and for the past two years has been head of the General Medicine Branch, Research Division, Bureau of Medicine and Surgery of the Navy Department.

GUEST LECTURERS AT NAVY MEDICAL CENTER

The second of the series of guest lectures sponsored by the Naval Medical School at the medical center, Bethesda, Md., was presented on October 31 by Dr. James B. Sumner, professor of biochemistry, Cornell University, and Nobel Prize winner, whose subject was "The Relation of Enzymes to Life."

Brig. Gen. George E. Armstrong, deputy surgeon general, U. S. Army, addressed the staff and student body of the Naval School of Hospital Administration at Bethesda October 15 on "The Position of the Administrative Officer in the Medical Department of the Army."

NAVAL RESERVE MEDICAL DIVISIONS

The commandant of the Ninth Naval District with headquarters at Great Lakes, Ill., announces that sixty-eight voluntary Naval Reserve medical divisions are to be organized in the thirteen midwest states of the Ninth Naval District. A medical division will comprise seventy-five reserve medical officers and fifteen specialists in allied sciences, fifty naval nurses and two hundred and fifty reserve hospital corps men. The divisions will be established at medical centers and educational institutions under the direction of an inactive reserve medical officer of rank not lower than captain. In the event of a national emergency these divisions will serve as personnel pools and may be ordered to active duty individually or in teams for assignment to naval hospitals, naval bases or other overseas duty. Interested Naval Reserve Medical Corps personnel in the Ninth Naval District should write to the Commandant, Attention: District Medical Officer, Great Lakes, Ill.

VETERANS ADMINISTRATION

53,000,000 CHEST X-RAY FILMS

The Veterans Administration is now the custodian of more than 53,000,000 Army chest x-ray films of World War II veterans. These are the films made of each Army veteran at the time of his induction and separation from the service. The chest x-ray films of Navy and Marine Corps personnel have been retained by the Navy, while those of the Coast Guard are in the possession of the U. S. Public Health Service. The Veterans Administration has established a central case register of all veterans who were discharged from the armed forces because of tuberculosis. This register will help the outpatient clinics of the regional offices to keep in touch with each veteran who contracted tuberculosis while in the service and will help the long range antituberculosis program of the Veterans Administration. The records show that about 23,000 veterans of World War II are now drawing compensation for tuberculosis contracted in the service.

NON-SERVICE-CONNECTED DISABILITIES

The Veterans Administration has issued an extensive statistical summary of its activities, among which are the following: The total number of Veterans Administration patients in hospitals on Sept. 23, 1947 was 105,203. Of the 92,066 who were in Veterans Administration hospitals, 60,764 were patients with non-service-connected disabilities, 30,290 were veterans with service-connected disabilities, while "others" with non-service-connected disabilities amounted to 1,012. The total number of living veterans at the end of September was 18,450,000, of whom 14,555,000 were veterans of World War II. At that time the applications for automobiles for disabled veterans numbered 27,831. The veterans awaiting hospital admission at the end of the month numbered 17,057, of whom 16,328 had non-service-connected disabilities.

THE NUMBER OF PATIENT-STUDENTS

Twenty thousand ill and disabled patients in Veterans Administration hospitals are studying correspondence courses ranging from high school English, mathematics and history to bookkeeping, farming and carpentry. Most of the two hundred and thirty-four available courses have been obtained from the U. S. Armed Forces Institute at Madison, Wis. A patient studies a subject at his leisure under the direction of a trained medical rehabilitation staff member; at the end of the course he may take an examination, the papers being sent to the University of Wisconsin Extension Division for grading. In most cases courses studied in hospitals may be converted into credits toward a high school diploma if prior arrangements are made with the secondary school last attended by the patient. More than 2,500 patients last year were discharged from Veterans Administration hospitals with high school diplomas earned while bedridden. Courses taken by hospitalized patients are not charged against their entitlement to education and training under Public Law 16 or the G. I. Bill.

DR. FREER APPOINTED DEPUTY MEDICAL DIRECTOR

Dr. Arden Freer has been appointed deputy medical director of the Veterans Administration to succeed Dr. Robert C. Cook, who requested transfer to Colorado, where he will be manager of the Veterans Administration Hospital at Fort Logan. Dr. Freer, a native of New York, obtained his education at New York University and Bellevue Hospital Medical College. He interned at Bellevue Hospital from 1913 to 1915. Following recent retirement from the Army Medical Corps after thirty-two years of service, Colonel Freer joined the Veterans Administration on Jan. 1, 1947 as executive officer to the chief of professional services. He had been chief of medical service and executive officer at Walter Reed General Hospital; chief of professional administrative service and later director of the medical consultants division in the Surgeon General's Office. Dr. Freer has been awarded the Distinguished Service Medal, the Legion of Merit and the Army Commendation Ribbon. Dr. Roy A. Wolford, assistant chief of veterans' tuberculosis service, has been named acting executive officer of professional services, pending permanent appointment of a successor to Dr. Freer.

DR. DAWSON SUCCEEDS DR. COVALT ON REHABILITATION SERVICE

Dr. Donald A. Covalt, chief, Veterans Administration physical medicine rehabilitation service, resigned, effective November 15, to become associate professor of physical medicine and rehabilitation at New York University School of Medicine and head of the university's new Rehabilitation Institute. Dr. A. Ray Dawson, head, physical medicine rehabilitation service in the Richmond, Va., branch office will succeed Dr. Covalt.

Dr. Dawson graduated from the Medical College of Virginia, served a residency in psychiatry at St. Elizabeth's Hospital, Washington, D. C., and for six years was with the U. S. Civil Service Commission. During the recent war he was on duty in the office of the Surgeon General, in the office of the Air Surgeon, and was a flight surgeon.

Dr. Covalt, a graduate of Indiana University Medical School, practiced in Muncie, Ind., for about nine years. He served as

chief of rehabilitation for the air corps and recently was in charge of establishing medical rehabilitation units in the Veterans Administration's hundred and twenty-six hospitals.

PERSONAL

Dr. Frederick J. Bradshaw has assumed the duties of chief of professional services at the Veterans Administration hospital, Gulfport, Miss., succeeding Dr. J. W. Green, who was assigned to the Philadelphia VA Branch area. Dr. Bradshaw has been with the Veterans Administration since 1938, except for his period of service during the recent war.

Dr. Ethan F. Butler of Elmira, N. Y., has been named chief medical director for the Veterans Administration in the state of New York and will have his headquarters in New York City. Dr. Butler graduated from Princeton and later from Johns Hopkins Medical School, Baltimore, and served at the Mayo Clinic, Rochester, Minn., for two years.

Dr. William A. Hunt, professor of clinical psychology, Northwestern University, Chicago, has been appointed to the Veterans Administration National Advisory Board on Medical Problems. Miss Cathryn R. VerMurlen, Grand Rapids, Mich., has resigned from the advisory board to accept a full time position as assistant chief of the diabetic service in the Atlanta, Ga., branch office of Veterans Administration.

PUBLIC HEALTH SERVICE

CENSUS OF PUBLIC HEALTH NURSES

The assistant chief, Office of Public Health Nursing, U. S. Public Health Service, Anna Heisler, states in the October issue of *Public Health Nursing* that 21,171 nurses were on the rolls of state and local public health agencies as of Jan. 1, 1947, an all time high. Nevertheless at that time 2,489 vacancies existed in budgeted positions reported by the states, and 1,087 counties had no rural public health nursing service.

The annual census of public health nurses shows that the total number of both supervisory and staff nurses increased slightly in 1947 over 1946 in proportion to increased populations. The ratio in twenty-one states averaged 1 public health nurse for each 10,000 persons and one state had 1 nurse to each 20,946 persons. In both years the ratio was 1 nurse for each 5,000 persons in eight Northeastern states and in Arizona, Alaska and the Virgin Islands. This ratio meets the standard, which excludes bedside nursing service, set by the American Public Health Association; but no state in 1947 came up to the standard set by the National Organization for Public Health Nursing, 1 nurse to each 2,000 persons, for service including bedside nursing.

ENGINEERS STUDY PUBLIC HEALTH

Twenty graduate engineers from various states and the territory of Hawaii have accepted one year fellowships for graduate study in public health supported by a grant from the National Foundation for Infantile Paralysis from March of Dimes funds. The U. S. Public Health Service stated that these awards make a total of fifty-five engineers who have or will receive training in public health under a grant by the National Foundation for Infantile Paralysis of $228,400. The twenty engineers were selected from a larger group of applicants by the Engineers Fellowship Awards Committee. In addition to nine months of academic study in a school offering graduate work in public health engineering, each fellow will have three months of field training in a state or local health department. After satisfactory completion of the courses they will receive either the master of public health or the master of engineering degree.

TEN MILLION DOLLARS IN RESEARCH AWARDS IN TWENTY MONTHS

The U. S. Public Health Service reported to the Federal Security Administration that between Jan. 1, 1946 and Sept. 15, 1947 it had made awards for basic medical research totaling $10,214,174 to six hundred and twenty-nine scientists in one hundred and ninety-three institutions including ninety-seven universities and colleges, thirty-four hospitals and clinics and a smaller number of foundations, sanatoriums, health departments and persons. This federal program is planned and directed, the report says, by two hundred and fifty of the nation's top civilian scientists for the purpose of producing the research which they consider most essential to the improvement of the nation's health. The largest single sum in this total was awarded for venereal disease research, and the use of penicillin in the treatment of syphilis was the subject of most of these particular projects. The second highest sum was granted for research in cancer and the third highest, for research on cardiovascular disease. Awards were made in thirty-six states and Alaska, Australia, Canada, Colombia, Guatemala and the Philippine Islands.

MORE LIBERAL REQUIREMENTS FOR FELLOWSHIPS

The U. S. Public Health Service announces new and more liberal eligibility requirements for research fellowships in order to increase the number of trained scientists. Formerly the fellowship program was limited to students with master's degrees but now it will be open to those with bachelor's degrees, and they will receive in addition to tuition fees stipends of $1,200 if they have no dependents and $1,600 if they have dependents. The stipends for fellows with master's degrees will be tuition fees plus $1,600 without or $2,000 with dependents, and those holding doctor's degrees will receive $3,000 and $3,600, respectively. Fellowships are awarded for one year but may be renewed. Application forms are available at the National Institute of Health, Bethesda, Md.

INCOME TAX

On Jan. 1, 1949 U. S. Public Health Service salaries will become subject to the same withholding procedure now used in collecting tax on civilian wages, and public health service officers will not be allowed to claim $1,500 military exemption.

Any member of the public health service who dies on active duty between Dec. 7, 1941 and Jan. 1, 1948 is not subject to federal income tax within this war period, according to the *U. S. Public Health Services News*. Taxes already collected may be refunded if claims to the Treasury Department are filed on form 843 before Jan. 1, 1949 or within three years from due date, whichever is later.

NATIONAL INSTITUTE OF HEALTH TO BUILD HOSPITAL

A site has been selected and plans are being drawn for a six hundred bed hospital for the National Institute of Health, for which the Eightieth Congress appropriated $2,650,000 for lands and plans. The site is 300 acres directly south of the old institute grounds on the outskirts of Bethesda, Md. This medical center when complete will be devoted to clinical research in cancer, mental illness, cardiovascular diseases and geriatrics. This new plant will be the first National Institute of Health faculty for clinical investigations.

DR. LOVE ASSIGNED TO GREECE

Dr. Fred W. Love of the Public Health Service was assigned to administer the tuberculosis control program in Greece and was expected to leave about November 1 for a period of two years. Since last January Dr. Love had been assigned to the South Carolina state department of health, where he served with the division of tuberculosis control.

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

ARKANSAS

Fifth District Society Meeting.—At a meeting of the Fifth District Medical Society October 30 in Camden, the speakers were Dr. Lorenzo T. Evans, Batesville, president of the Arkansas Medical Society; Dr. Euclid M. Smith, Hot Springs National Park, chairman of the Council, and Dr. William R. Brooksher, Fort Smith, secretary of the state society. A public meeting in the Municipal Auditorium in the evening was addressed by Dr. Morris Fishbein, Editor of THE JOURNAL, who spoke on "A Century of Medical Progress," and by Gov. Ben Laney.

CALIFORNIA

Lane Medical Lectures.—Dr. Wilder G. Penfield, McGill University Faculty of Medicine, Montreal, Canada, and director of the Montreal Neurological Institute, will deliver the twenty-ninth course of the Lane Medical Lectures being given by Stanford University School of Medicine, San Francisco, November 11-18. The last two lectures will be November 17, "Dreams, Hallucinations and Memory," and November 18, "Cortex, Consciousness and Cerebral Seizures."

Cancer Teaching Days.—Refresher courses for county medical societies and hospital staffs will be presented during the coming year by the Chronic Disease Service of the California Department of Public Health, the Cancer Commission of the California Medical Association and the California Division, American Cancer Society. The refresher courses will consist of one day teaching and visits to local nonmetropolitan areas by local clinicians representing the various specialties which have a particular contribution to make toward cancer control. The program has been designed to extend the postgraduate cancer educational program from the medical school centers into other parts of the state. Programs will be given at the request of the local medical society.

CONNECTICUT

Society News.—The annual Connecticut Conference of Social Work featured a panel discussion on "New Developments in Mental Health Programs" November 13-14 in Waterbury.

Appointed Executive Officer, Department of Surgery.—Dr. Gustaf E. Lindskog, associate professor of surgery, has been appointed executive officer of the department of surgery, Yale University School of Medicine, New Haven, following the retirement of Dr. Samuel C. Harvey. Dr. Lindskog is a graduate of Harvard Medical School, Boston, 1928.

Grant for Research in Penicillin and Syphilis.—The U. S. Public Health Service has granted funds amounting to $71,756 for basic medical research in penicillin and syphilis for work being done under the direction of Dr. Paul D. Rosahn, New Britain, who has been conducting studies on syphilis in experimental animals for the last two years. He is an assistant clinical professor of pathology at Yale Medical School, New Haven. In 1944 he was appointed technical aide to the Office of Scientific Research and Development Committee on Medical Research for the study of the effect of penicillin in syphilis.

DISTRICT OF COLUMBIA

University Acquires Nurses' Home.—George Washington University has purchased the Everglades apartment on H Street, N. W., for use as a nurses' home after the first of the year. The eight story brick structure containing eighty apartments is located a block south of the new four hundred and five bed university hospital at Washington Circle.

Dr. Kiernan Appointed to Department of Surgery.—Dr. Paul C. Kiernan, Rochester, Minn., has been appointed associate professor of surgery to the Georgetown University School of Medicine, where he received his medical degree in 1937. Dr. Kiernan has been head of the section in general surgery at the Mayo Clinic.

Gift of Atlases to University.—A set of atlases "Atlas de Anatomía de Clínica Obstétrica Normal y Patológica," written by Drs. Eliseo Cantón and Warren B. González, were presented to George Washington University School of Medicine at a luncheon at the Mayflower Hotel, September 15. They were presented in behalf of the Ambassador of Argentina, Señor Dr. Don Oscar Ivanissevich.

Dr. Blain Appointed Professor of Psychiatry.—Dr. Daniel Blain, Washington, has been appointed professor of psychiatry and director of the department at Georgetown University School of Medicine. A graduate of Vanderbilt School of Medicine, Nashville, Tenn., 1929, Dr. Blain has been associated with the Peter Bent Brigham and Boston City hospitals and the Austen Riggs Foundation, Stockbridge, Mass. He was with the U. S. Public Health Service from August 1942 until December 1945, then was detailed to the Veterans Administration as assistant medical director, chief of the division of neuropsychiatry.

ILLINOIS

Public Lectures.—The following lectures have been arranged by the Educational Committee of the Illinois State Medical Society:

Nov. 17, Dr. Robert R. Mustell, Chicago, Lawson Y. M. C. A., Chicago, War and Disease.

Nov. 23, Dr. Charles B. Congdon, Chicago, Sunday Evening Fellowship Club, Roselle, Child Guidance and Behavior Problems.

Graduate Conference at Princeton.—The Illinois State Medical Society has arranged a graduate conference for the Second Councilor District, including the counties of Whiteside, Lee, Bureau, LaSalle, Putnam, Marshall, Woodford and Livingston, at Hotel Clark, Princeton, on Thursday, December 4, 1:30 p. m. Subjects to be discussed by Chicago physicians include obstetrics, coronary thrombosis, pneumonia and arthritis. There will be a round-table discussion from 5:15 to 5:45, dinner at 6:30 and an after-dinner discussion of acute abdominal emergencies. Dr. Irving H. Neece, Decatur, president of the Illinois State Medical Society, will speak.

Chicago

Society News.—At a meeting on September 24 the Chicago Tuberculosis Society elected the following officers: Dr. Camillo E. Volini, president; Dr. Ernest D. Nora, vice president, and Dr. Joseph Taymor, secretary-treasurer.——At a meeting of the North Shore Branch of the Chicago Medical Society, Edgewater Beach Hotel, November 4, the subjects for discussion were "The Use of Nitrogen Mustard in Treatment of Neoplastic Diseases" and "Medical Problems of Atomic Warfare."

Dr. Bessey to Succeed Dr. Welker.—William H. Welker, Ph.D., head of the department of biologic chemistry, University of Illinois College of Medicine, retired after completing his thirty-fourth year on the university staff at the close of the 1946-1947 school year. A graduate of Columbia University, New York, 1908, Dr. Welker joined the faculty as assistant professor of biologic chemistry in 1913. He has been chairman of the committee on graduate study and a member of the executive committee of the graduate school. He will complete research projects in cancer which he is currently conducting and will serve as a consultant at the university's allergy unit following retirement. Otto A. Bessey, Ph.D., Scarsdale, N. Y., chief, division of nutrition and physiology, Public Health Research Institute of New York City, has been appointed head of the department effective March 1, 1948 to succeed Dr. Welker. Dr. Bessey received his Ph.D. in biochemistry and nutrition at the University of Pittsburgh, 1932. He has been with the Public Health Research Institute of New York City since 1941, serving as director from 1942 to 1945. He is also consultant in nutrition to the office of the Surgeon General.

INDIANA

County Society Establishes Library.—The Whitley County Medical Society in October voted $1,500 to the new County Memorial Hospital to establish a medical library and equip a conference room. The funds have accumulated for the past several years from the physical fitness and immunization program carried out in the city and county schools. All future funds from the project will also be given for upkeep of the library and conference room.

KANSAS

Appointed to State Department of Health.—Dr. Francis E. Bishop, Atlanta, Ga., on July 15 became director of the Division of Tuberculosis Control, Kansas State Board of Health, succeeding Dr. Paul V. Joliet, on loan from the U. S. Public Health Service for the past year. Dr. Bishop received his M.D. degree from the University of Kansas School of Medicine, Lawrence-Kansas City, in 1945. He has filled assignments with the Herman Kiefer Hospital, Detroit, the University

of Minnesota, Minneapolis, and the Kansas State Board of Health. He had been associate clinician of the Tuberculosis Control Division, Georgia State Department of Health, until his return to Kansas this summer.

MICHIGAN

Fined for Practicing Without License.—It is reported that Edwin P. Burton, 20860 Wyoming Avenue, West Eight-Mile Road community, former assistant to an Oakdale Gardens physician, was fined $200 September 8 when he pleaded guilty in circuit court to a charge of practicing medicine without a license.

Fellowships Awarded Grand Rapids Physicians.—Lowe Fellowships for Special Postgraduate Study have been awarded to three Grand Rapids physicians, Drs. Garritt E. Winter, Kent A. Dewey and E. Hemingway Fuller Jr., all on the staff of Butterworth Hospital. The choice was made entirely from the records of the men without the knowledge of their names by Dean Albert C. Furstenberg of the University of Michigan Medical School, from among members who have had less than three years on the senior staff of the hospital or at least a year on the junior associate or resident staff. Each will receive $500.

MINNESOTA

Survey Medical Education in Japan. — Dr. Irvine McQuarrie, head of the pediatrics department, University of Minnesota Medical School, Minneapolis, left for Japan September 16 to conduct a three months' survey of medical education and practice for the Rockefeller Foundation. He will visit medical schools and serve as a special consultant to General MacArthur on medical education. His report will aid the Rockefeller Foundation in its future support of Japanese medical training.

Wabasha County Meeting.—The annual meeting of the Wabasha County Medical Society was held at Wabasha October 9. A resolution of appreciation of the efforts of the *Lake City Graphic* in pointing out the dangers of socialized medicine in recent years was among the resolutions adopted. Speakers from the State Health Department, the Mayo Clinic and the State Medical Association addressed the group. An appeal was made to the state public health service to send into the locality as soon as possible one of the mobile x-ray units for the early detection and diagnosis of cases of tuberculosis.

St. Paul Roentgen Survey. — St. Paul is undergoing a citywide roentgen survey initiated by the U. S. Public Health Service in the middle of October and continuing to the middle of December. St. Paul is the second city of its size selected as one of the ninety-two major cities of the United States for a survey put on in cooperation with the city health department, as well as the local medical society and other groups. The Ramsey County Public Health Association will make available $25,000 of Christmas seal funds, in addition to services and materials. It is hoped that at least 200,000 persons will be able to take advantage of this opportunity.

MISSOURI

St. Louis Medical Society.—The annual Barnard Lecture will be given November 18 by M. J. Sher, Ph.D., National Cancer Institute, Bethesda, Md., on "Cancer Chemotherapy." On November 24, Dr. Shields Warren, Harvard Medical School, Boston, will speak at a joint meeting of the St. Louis County Medical Society and the St. Louis Dental Society at the Jefferson Hotel, on "Atomic Energy in Japan and America." Families and friends are invited. The society's annual Robert J. Terry Lecture will be delivered December 2.

Dr. Schoemaker Honored.—A testimonial luncheon and special program were held at St. Louis University School of Medicine, October 16, to honor Dr. Daniel M. Schoemaker, recently appointed professor emeritus of anatomy after forty-two years of teaching in the department. A gold watch and a check were presented to Dr. Schoemaker from his former pupils. Alumni from all sections of the country and many faculty members attended the luncheon. Dr. Schoemaker, a graduate of Rush Medical College, Chicago, 1904, came to St. Louis University School of Medicine as associate professor of anatomy in 1907; he was made a professor in 1911 and director of the department in 1930.

Research on Hypertension. — Washington University School of Medicine, St. Louis, is conducting research on the cause of hypertension under a $270,000 grant from the U. S. Public Health Service for a five year project. The research, now under way after a year of preparation, is under the direction of Dr. Henry A. Schroeder, associate professor of medicine, who has been studying the problem since 1937 except for four years of service in the Navy. The research team is made up of a biochemist, a clinical chemist, a physiologist, a clinical physiologist and an enzyme chemist. Other laboratories in the school also are available, along with six beds in one ward, where patients can be observed.

NEW JERSEY

Symposiums on Duodenal Ulcer and Colitis. — The surgery section of the Academy of Medicine of Northern New Jersey will conduct a symposium on the surgical management of duodenal ulcer November 18 in Newark, 8:45 p. m. The section of medicine and pediatrics will present two New York physicians November 20 at 8:45 p. m. in a symposium on treatment of ulcerative colitis.

Annual Meeting of Surgeons.—The annual meeting of the Society of Surgeons of New Jersey will be November 19 in New Brunswick. Clinics will be held in the morning at Middlesex General Hospital, and scientific programs from 10 a. m. to 12:30 p. m. at the Johnson and Johnson Foundation and the Squibb Institute for Medical Research. The social program includes an afternoon of golf and a banquet at 7 p. m. at the Forsgate Country Club.

NEW YORK

Society News.—The obstetric and gynecologic section of the Rochester Academy of Medicine observed the hundredth anniversary of the discovery of the cause of puerperal fever by Ignaz Philipp Semmelweis at a dinner October 14 in Rochester. The guest speaker was Dr. Palmer Findley, Omaha, Neb.

Personal.—Dr. John G. Lynn, director of Grasslands Hospital, Valhalla, has resigned to accept appointment in November as director of the Bureau of Mental Hygiene, Territory of Hawaii. Dr. Lynn is a graduate of the University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1927.

Mr. Baruch's Address on Medical Care to Be Broadcast.—Bernard Baruch's address on "Medical Care for the People of America" will be broadcast from the Biltmore Hotel November 19 over CBS at 11:15 p. m. Eastern standard time from the dinner meeting of New York medical societies on prepaid medical care plans. The dinner is being sponsored by the Medical Society of the State of New York, the Coordinating Council of the Five County Medical Societies of Greater New York and the Greater New York Hospital Association (THE JOURNAL, November 8, p. 653).

New York City

Research on Exposure to Cold.—The Surgeon General's Office, U. S. Army, has awarded a contract for $47.180 to New York Medical College, Flower and Fifth Avenue Hospitals, for research on the effect of generalized exposure to cold. The project will be under the supervision of Dr. Kurt Lange, assistant clinical professor of medicine.

The Second Harvey Lecture.—Dr. B. C. J. G. Knight, department of biochemistry, Wellcome Physiological Research Laboratories, Beckenham, Kent, England, will deliver the second Harvey Lecture of the current series at the New York Academy of Medicine on November 20. Dr. Knight will speak on "Bacterial Chemistry and Evolution."

Booklets for Young Parents.—More than 18,000 young parents in Queens have received copies of "Your Baby," a booklet which describes modern measures for protection against infant illnesses. Produced by the National Tuberculosis Association and endorsed by the American Academy of Pediatrics, the booklet has been distributed by the Queensboro Tuberculosis and Health Association. The association is also offering free chest x-rays to young parents in an effort to keep newborn babies free from tuberculosis.

Standard Oil Gives $250,000.—The New York University-Bellevue Medical Center Fund has received a gift of $250,000 from the Standard Oil Company (New Jersey); $100,000 for the laboratories in the Institute of Industrial Medicine, $50,000 for clinical facilities in the University Hospital, $50,000 to support the general program and $50,000 for research relating to the petroleum industry. The last amount will be given in equal annual installments over a period of five years beginning in 1948. The New York University-Bellevue Medical Center Fund is conducting a campaign for $4,000,000 in gifts from business and industry as its share in the total needed to assure the completion of the medical center which includes the Institute of Industrial Medicine. The institute was recently inaugurated with Dr. Anthony J. Lanza, New York, as director (THE JOURNAL, June 28, p. 818).

OHIO

Two Hundred and Fifty-Thousand Free Roentgenograms.—The Anti-Tuberculosis League of Cleveland in its campaign in Cuyahoga County to stamp out tuberculosis took the 250,000th free chest roentgenogram September 2. The league, in cooperation with the County Tuberculosis Clinic and health officers of the Greater Cleveland area, have been sponsoring mass x-ray surveys for three years. More than two hundred and seventy-five industrial concerns have invited the x-ray units into plants for voluntary employee checkups. The league is planning a new five year program with the goal a roentgenogram of every person in the Greater Cleveland area.

Long Term Research on Infectious Diseases.—Western Reserve University School of Medicine, Cleveland, will undertake a long-term research program to study a selected small group of Cleveland families, preferably young couples with children. Each illness in every family under observation will be studied in detail, determining, if possible, the mode of introduction of the infection and how it spreads from one member to another. The program, to be conducted by the department of preventive medicine under the direction of Dr. John H. Dingle, has been approved by the directors of the Academy of Medicine of Cleveland. It will be supported by funds of the department and grants from the Brush Foundation, the Cleveland Foundation, the Commission on Acute Respiratory Disease, the Army Epidemiological Board and, it is planned, the S. P. Fenn Trust.

Clinical Advisory Committee Appointed.—Nine outstanding physicians and scientists from various parts of the United States have been appointed as a clinical advisory committee to the Institutum Divi Thomae, Cincinnati. The institute will consult with the committee on research which pertains to clinical medicine. At the organizational meeting in Cincinnati, Dr. Andrew C. Ivy, vice president of the University of Illinois, Chicago, was elected chairman and Edmund V. Cowdry, Ph.D., Washington University, St. Louis, vice chairman; the other members are Drs. Josiah J. Moore, James H. Hutton and Edward L. Compere, Chicago; Karl F. Meyer, San Francisco; Hobart A. Reimann and William D. Stroud, Philadelphia, and Albert E. Casey, Birmingham, Ala. Lawrence C. Salter, Chicago, is secretary of the committee. The Institutum Divi Thomae is an educational organization with affiliated branches throughout the country devoted to training students for research work.

OREGON

Developments at University Medical School.—The State Board of Higher Education, in dealing with the University of Oregon Medical School, Portland, has authorized the following improvements and developments: $25,000 will go to strengthen the department of surgery through added personnel and facilities. A gift of $10,827 has been received from ninety-seven donors to set up the Thomas M. Joyce Memorial Fund to establish a fellowship in surgery. Preliminary plans for a combined administration and laboratory building have been approved. The board authorized transfer of funds to add to general research and to budget $20,000 of a $60,000 three year research grant from the Kellogg Foundation for nursing education. The following promotions have been authorized: Dr. Homer P. Rush to clinical professor of medicine; Drs. Robert L. Benson, John H. Fitzgibbon, Blair Holcomb and Merl Margason to clinical professors of medicine; Drs. Isidor Cherniac Brill and Wesley E. Gatewood to associate clinical professors of medicine; Dr. Willard F. Hollenbeck to assistant clinical professor of medicine, and Drs. John Krygier, Frank Perlman and Frank Underwood to assistant clinical professors of medicine.

TEXAS

Annual Greenwood Lecture.—Dr. Percival Bailey, University of Illinois College of Medicine, Chicago, delivered the annual James Greenwood Lecture in Neurology at the University of Texas Medical Branch, Galveston, in October on "The Organization of the Cerebral Cortex."

Texas Medical Center Plans.—A two hundred bed children's hospital and allied units are to be built on a six acre tract in the Texas Medical Center, Houston, according to plans announced at a dinner of the Texas Pediatric Postgraduate Conference October 14. Dr. John K. Glen, Houston, member of the Texas Children's Foundation, outlined the complete children's center plan, which includes the hospital, a children's disease research unit, a postgraduate pediatric school, a children's hospital for contagious diseases and a special surgical hospital for children. Complete plans for the center include the general hospital, tuberculosis and cancer hospital and central outpatient clinic.

Graduate Medical Assembly at Houston.—The Postgraduate Medical Assembly of South Texas will hold its annual meeting at the Sam Houston Coliseum, Houston, December 1-3. Sixteen distinguished guest speakers will be heard. A continuous general assembly, a continuous program for the eye, ear, nose and throat section, a cancer symposium, medical motion pictures and scientific and technical exhibits make up the program. The registration fee of $15 will be reduced to $7.50 for physicians on active duty in the armed forces.

VIRGINIA

Dr. Rucker Honored.—Dr. Joseph Rucker, Bedford, Norfolk and Western Railway surgeon, since Jan. 1, 1897, was awarded the diamond insignia, symbol of fifty or more years of service with the railway, at his home September 16. He is a graduate of the University of Louisville School of Medicine, Louisville, Ky., 1893, and has practiced in Bedford for fifty-three years. He was secretary of the Bedford County board of health for many years and is a past president of the Bedford County Medical Society.

Dr. Rawls Receives the Horsley Award.—Dr. Julian L. Rawls, Norfolk, was presented the J. Shelton Horsley Memorial Award of the Virginia Division of the American Cancer Society October 18 at a meeting of the trustees in Richmond. The award, given first this year, will be made annually in memory of the late Dr. Horsley of Richmond, who was president of the organization at the time of his death April 7, 1946. Dr. Rawls, a graduate of the Medical College of Virginia, Richmond, 1904, was instrumental in establishing the diagnostic tumor clinic in Norfolk in 1938.

WISCONSIN

Cancer Clinic at Superior.—A joint clinical conference of the Eleventh Councilor District and the St. Louis County Medical Society of Minnesota will be held at Superior November 19 in St. Mary's Hospital, under the sponsorship of the Committee on Cancer, State Medical Society of Wisconsin, and the Wisconsin Division of the American Cancer Society. In the morning, papers on the "Papanicolaou Smear method for Diagnosis of Cancer" and the "Diagnosis of Carcinoma of the Stomach" will be presented. Subjects on the afternoon program are "Carcinoma of the Cervix, Diagnosis and Treatment" and "Differential Diagnosis and Treatment of Carcinoma of the Breast." A symposium and question and answer period will be held from 4:15 to 5:15 p. m. The after-dinner speaker will be Dr. Frederick E. Mohs, University of Wisconsin Medical School, Madison, on "Chemosurgery in the Treatment of Cancer." A public meeting at the Hotel Superior will be held from 2 to 4 p. m.

The Annual Dearholt Day.—The eighth annual Dearholt Day will be observed in Madison, November 18. The afternoon program will be given in the Service Memorial Institutes Building in connection with the University of Wisconsin Medical School; the evening meeting will be held in conjunction with the monthly meeting of the Dane County Medical Society and the Wisconsin Trudeau Society at the Madison Club in Madison. Dr. Hugh E. Burke, Montreal, Canada, will discuss "Experimental Pulmonary Tuberculosis, Primary and Reinfection," and Dr. George W. Wright, Saranac Lake, N. Y., "Present Day Methods of Studying Pulmonary Function." Dearholt Day began seven years ago when the Dearholt Day Program was first presented as a memorial to the late Dr. Hoyt E. Dearholt, who was executive secretary of the Wisconsin Anti-Tuberculosis Association from 1908 until his death in 1939. Dr. Dearholt was a pioneer in the program for the control and eradication of tuberculosis, and the Dearholt Day Program has become a definite part of the educational pattern of medicine, both in and out of the medical schools.

LATIN AMERICA

New Medical Journal.—*Archivos Peruanos de Patología y Clínica* is the new quarterly journal of the Department of Pathology of the "2 de Mayo" Hospital of Lima of the Faculty of Medicine of Lima, and of the medical association of the department. The board of directors consists of Dr. Oscar Urteaga Ballón, editor, and Drs. Carlos Lanfranco L., Jorge Campos Rey de Castro and Mario Pastor B., associate editors. The March and June issues include original articles, clinical notes, current literature and medical news.

GENERAL

Montana Affiliates With Rocky Mountain Medical Journal.—The *Rocky Mountain Medical Journal* has announced that the Montana State Medical Association will join in sponsorship of the journal in January 1948.

Dr. Azzouni Awarded Fellowship in Pediatric Research.—The first Mead Johnson Fellowship of the Society for Pediatric Research was awarded to Dr. Yousef N. Azzouni, of Alexandria, Egypt, now studying in the pediatric department of St. Louis University School of Medicine. Dr. Azzouni is a visiting fellow in this country. He has spent four years as resident medical officer in the Queen Nazhi Childrens Hospital of Alexandria and will return to join the faculty of the School of Medicine of the Fuad I University at Cairo.

Fellowship in Genetics or Mental Health.—The Helen Putnam Fellowship for Advanced Research in the field of genetics or of mental health is being offered by Radcliffe College, Cambridge, Mass., for the academic year 1948-1949. The fellowship, carrying a stipend of $2,000 for an eleven month period beginning October 1, 1948, is open to women who have their doctorate or equivalent qualifications and who have research in progress. Applications should be submitted to Radcliffe College not later than April 1, 1948. The appointment will be announced about May 1, 1948.

Dr. Wilson Appointed Red Cross Medical Administrator.—Dr. Frank E. Wilson, Silver Spring, Md., has been appointed administrator of the American Red Cross medical services to succeed the late Dr. Courtney Smith, killed in a plane crash last June. Dr. Wilson has been deputy administrator of the services since joining the Red Cross staff June 15, 1945. As administrator he will be responsible for the Red Cross' disaster medical and nursing service and employees' health service. Dr. Wilson is a graduate of the University of Tennessee College of Medicine, Memphis, 1933. After several years of private practice, he served with the North Carolina Health Department in the Army Medical Corps and in World War II.

Professor Potter Receives Chemistry Award.—Professor Van Rensselaer Potter, Ph.D., of the McArdle Memorial Library for Cancer Research, University of Wisconsin Medical School, Madison, Wis., received the $1,000 Paul-Lewis Laboratories Award in enzyme chemistry September 15 at the national meeting of the American Chemical Society in New York. Dr. Potter received his Ph.D. degree from the University of Wisconsin, 1938, and has since been a National Research Fellow Agr., in Stockholm, a Rockefeller traveling fellow in Sheffield and Chicago and a Bowman research fellow at the department of oncology at the University of Wisconsin, where he has been an assistant professor in the department of cancer research since 1942. Dr. Potter was cited at the meeting for his contributions in the field of respiratory enzymes. His recent research has been on the role of enzymes in cancer.

Special Society Elections.—At the September meeting of the American Reontgen Ray Society, Dr. James B. Edwards, Leonia, N. J., was installed as president, Dr. Lawrence Reynolds, Detroit, was chosen president-elect and Dr. H. Dabney Kerr, Iowa City, was reelected secretary. The next annual session of the society will be held in the Palmer House, Chicago, Sept. 14-18, 1948.——The American Association of Obstetricians, Gynecologists and Abdominal Surgeons in September installed Dr. Robert D. Mussey, Rochester, Minn., as president and chose Dr. James R. Bloss, Huntington, W. Va., president-elect and Dr. Leroy A. Calkins, Kansas City, Mo., secretary. The next annual session of the association will be at Hot Springs, Va., Sept. 9-11, 1948.——At the October meeting of the Baltimore-Washington Dermatological Society, the following were elected: Drs. Reuben Goodman, Washington, president, and Harry M. Robinson Jr., Baltimore, secretary.

Regional Conference on Medical Service.—The semiannual meeting of the Middle Atlantic States Regional Conference on Medical Service will be held November 20 in the auditorium of the county medical society building, Philadelphia. Dr. Walter F. Donaldson, Pittsburgh, secretary-treasurer of the Medical Society of the State of Pennsylvania, will report on the Secretary and Editors' Conference on subjects pertaining to medical service. Dr. Louis W. Jones, Wilkes-Barre, chairman, state medical society's committee of economics, will submit a report on the conference with Veterans Administration officials concerning the Home Care Program. The practice of medicine in relation to hospitals and staffs will be discussed by Drs. Wingate M. Johnson, Winston-Salem, N. C., and Louis H. Bauer, Hempsted, N. Y., both of the Board of Trustees of the American Medical Association. Dr. Joseph S. Lawrence, director of the Washington Office, Council on Medical Service, American Medical Association, will speak on the "Harness Report" and Dr. William D. Crecca, Newark, N. J., on the "Community Blood Bank."

WHO Assists in Cholera Outbreak in Egypt.—A program worked out by the World Health Organization Secretariat under the direction of Drs. Brock Chisholm and Frank A. Calderone has brought aid to Egypt quickly to help control the cholera epidemic. On receipt of details from the Egyptian Ministry of Public Health, the Secretariat offered its services in obtaining additional anticholera vaccine. A supply of more than 1,000,000 cc. of vaccine together with medical supplies were flown from New York to Egypt October 25. Another shipment was sent November 1. In cooperation with the World Health Organization the government of China made available 2,000,000 cc. of anticholera vaccine, which is being flown by U. S. Army planes to Egypt. Another 1,000,000 cc. was sent by Brazil, France, Iran, Iraq, Italy, Switzerland, Tunisia, the United Kingdom, Russia and the United States. The WHO Expert Committee on Quarantine met in Geneva October 13-16, and in addition to the immediate question considered such problems as disinfection of aircraft, consular visas and bills of health. At the request of the organization, the U. S. Army in Europe sent two airplanes to Egypt for use in DDT spraying.

Fellowships Available Through National Research Council.—Fellowships in the medical sciences, available through the Medical Fellowship Board of the National Research Council for 1948-1949 include the following. 1. Fellowships supported by grants from the Rockefeller Foundation and designed to provide training and experience in research in all branches of medical science are open to citizens of the United State or Canada who possess an M.D. or Ph.D. degree. They are intended for recent graduates who are not yet professionally established. 2. Two groups of research fellowships are available through a grant from the National Foundation for Infantile Paralysis. The first group, open to applicants who hold either the Ph.D. or M.D. degree, provides opportunities for special training and experience in the study of virus diseases; the second group, open only to graduates in medicine who have completed one or more years of hospital experience in clinical surgery and are planning a career in orthopedic surgery, offers opportunities for training and research in basic medical sciences of particular value in furthering progress in orthopedic surgery. 3. Fellowships in anesthesiology established through a grant from the American Society of Anesthesiologists are offered to foster a closer union between the clinical practice of anesthesiology and the fundamental disciplines on which anesthesia rests. Applicants must have an M.D. degree and must have completed one or more years of hospital experience as intern or resident.

The Medical Fellowship Board of the National Research Council has also under its jurisdiction a number of fellowships of senior grade in internal medicine (Welch Fellowships), epidemiology, clinical neurology, orthopedic surgery, pediatrics and virus diseases, for persons of proved research ability. Fellows will be appointed at a meeting of the Medical Fellowship Board early in March 1948. Applications must be filed on or before January 1. Appointments may begin on any date determined by the Board. For further details, address the Secretary, Medical Fellowship Board, National Research Council, 2101 Constitution Ave. N. W., Washington 25, D. C.

DEATHS IN OTHER COUNTRIES

Dr. Rudolf Neurath, professor of pediatrics, University of Vienna, 1913-1938, died in New York, October 14, aged 78, of heart disease.——**Dr. Charles P. Brentwood,** on the staff of St. Mary's, Manchester, since 1918, and president of the North of England Obstetrical and Gynaecological Society, died June 26, aged 56.

Marriages

CARLOS GUZMAN, San Juan, P. R., to Miss Harriett McFadden in West Pembroke, Maine, July 1.

PETER E. SIFNEOS, Athens, Greece, to Miss Ann Elizabeth Coit in Lothian, Md., August 2.

EDGAR LOWENSTEIN to Mrs. Evelyn Lewis Schlossinger, both of New York, August 3.

MARVIN C. MENARD, Cincinnati, to Miss Lucille Benigni of Walnut Hills, Ohio, recently.

BERT M. WARNE, Cincinnati, to Miss Gladys A. Hatfield of Lebanon, Ohio, August 9.

Deaths

Charles James Bloom ✠ New Orleans; born in New Orleans, Oct. 26, 1886; Medical Department of Tulane University of Louisiana, New Orleans, 1912; formerly on the faculty of his alma mater and professor of pediatrics at the Tulane University of Louisiana Graduate School of Medicine; at one time on the faculty of the Southern Pediatric Seminar in Saluda, N. C.; specialist certified by the American Board of Pediatrics, Inc.; served during World War I; member of the American Academy of Pediatrics; fellow of the American College of Physicians; past president of the Louisiana Pediatric Society; author of "Care and Feeding of Babies in Warm Climates"; school physician, Metairie Park Country Day School; at various times on the staffs of Hotel Dieu, Charity Hospital, Flint Goodridge Hospital, New Orleans Hospital and Dispensary for Women and Children and the Touro Infirmary, where he died August 29, aged 60, of coronary thrombosis.

Charles Campbell Green ✠ Houston, Texas; born in Selma, Ala., March 22, 1882; Medical Department of Tulane University of Louisiana, New Orleans, 1910; member of the founders group of the American Board of Surgery; member of the Southern Surgical Association and the American Association for the Surgery of Trauma; fellow of the American College of Surgeons; past president of the Texas Surgical Society, Harris County Medical Society and the Southern Texas District Medical Society; professor of clinical surgery at the Baylor University College of Medicine; served in France during World War I; formerly city health officer; affiliated with Hermann, Jefferson Davis and Methodist hospitals and St. Joseph's Infirmary; for many years chief surgeon for the Southern Pacific Railroad; died August 31, aged 65, of cerebral arteriosclerosis.

Robert Gladding Green ✠ Minneapolis; born in Wadena, Minn., Jan. 11, 1895; University of Minnesota Medical School, Minneapolis, 1922; professor and chairman of the department of bacteriology and immunology at his alma mater and professor of bacteriology and immunology at the graduate school; served in the Students' Army Training Corps during World War I; captain and medical officer, Civil Air Patrol, Wing 71, Air Corps, Minnesota State Guard, 1942-1943; fellow of the New York Zoological Society; member of the American Association for the Advancement of Science, the Society of American Bacteriologists, the Society for Experimental Biology and Medicine, the American Association of Pathologists and Bacteriologists and the American Association of Immunologists; died September 6, aged 52, of heart disease.

Samuel Bradbury ✠ Philadelphia; born in 1883; University of Pennsylvania Department of Medicine, Philadelphia, 1905; specialist certified by the American Board of Internal Medicine; member of the American Clinical and Climatological Association and the American Association for the Advancement of Science; served in France during World War I; at one time assistant professor of clinical medicine at the Cornell University Medical College in New York, where he was on the staff of the New York Infirmary for Women and Children; affiliated with Germantown Dispensary and Hospital and Pennsylvania Hospital; author of "Cost of Adequate Medical Care"; contributor to the Cyclopedia of Medicine, Surgery and Specialties; died in the Eastern Maine General Hospital, Bangor, Maine, August 30, aged 64, of coronary thrombosis.

Theodore William Benson, Petersburg, Alaska; Indiana University School of Medicine, Indianapolis, 1928; member of the American Medical Association; affiliated with Petersburg General Hospital; died August 11, aged 45, of congestive heart disease.

Charles Browne, Princeton, N. J.; University of Pennsylvania Department of Medicine, Philadelphia, 1900, served as mayor of Princeton; formerly congressman; died in the Princeton Hospital August 16, aged 71, of chronic glomerulonephritis, diabetes mellitus and heart disease.

Catherine Farrar Threlkeld Brydia, Ada, Okla.; National University of Arts and Sciences Medical Department, St. Louis, 1913; member of the American Medical Association; served as county health officer; on the staff of Valley View Hospital, where she died August 16, aged 72, of acute pancreatitis.

Romulus Brown Butt, Marion, N. C.; Emory University School of Medicine, Atlanta, 1920; served during World War I; died in Veterans Administration Hospital, Roanoke, Va., August 23, aged 57, of hypostatic pneumonia.

Waldo George Camp, Spurgeon, Ind.; Indiana University School of Medicine, Indianapolis, 1929; died August 5, aged 54, of injuries received in an automobile accident.

Judson David Chunn, Brownstown, Ill.; University of the South Medical Department, Sewanee, Tenn., 1907; died August 5, aged 67, of cerebral hemorrhage.

Eugene Morrissey Cleary, Milwaukee; Marquette University School of Medicine, Milwaukee, 1928; died in Columbia Hospital August 13, aged 45, of melanoma.

John Peavy Cochran ✠ Birmingham, Ala.; Birmingham Medical College, 1914; served during World War I; on the staff of South Highland Infirmary; died in Panama City, Fla., August 8, aged 56, of heart disease.

William Armor Copeland, St. Petersburg, Fla.; Medical Department of Western University of Pennsylvania, Pittsburgh, 1903; member of the American Medical Association and the Medical Society of the State of Pennsylvania; served during World War I; died in Bay Pines August 20, aged 73, of carcinoma.

Franklin Thompson DeWitt, Nemaha, Iowa; College of Physicians and Surgeons, Keokuk, 1896; member of the American Medical Association; died July 3, aged 83.

Charles Hall Dolloff ✠ Concord, N. H.; Dartmouth Medical School, Hanover, 1903; past president of the New Hampshire Medical Society; member of the American Psychiatric Association and the New England Society of Psychiatry; for many years superintendent of the New Hampshire State Hospital; died in New London August 18, aged 69, of coronary thrombosis.

Jesse Franklin Donnell, Crystal City, Mo.; Beaumont Hospital Medical College, St. Louis, 1891; Washington University School of Medicine, St. Louis, 1893; formerly president of the Farmers and Mechanics Bank in Festus; member of the American Medical Association; died in St. John's Hospital, St. Louis, August 14, aged 78, of cerebral thrombosis.

Monroe Etherton, Carbondale, Ill.; St. Louis College of Physicians and Surgeons, 1891; member of the American Medical Association; served overseas during World War I; died August 17, aged 82, of adenocarcinoma of the tongue.

Edward Francis Fitzpatrick, Newark, N. J.; Baltimore Medical College, 1903; physician for the health department for many years; served as county jail physician and as city district physician; served during World War I; on the staffs of the Newark City and Presbyterian hospitals; died August 18, aged 66, of heart disease.

William Thomas Flanigan, Watervliet, N. Y.; Syracuse University College of Medicine, 1922; member of the American Medical Association; served during World War I; died August 18, aged 50, of acute dilatation of the heart.

S. Wade Glass, Lyon, Miss.; Memphis (Tenn.) Hospital Medical College, 1899; member of the American Medical Association; past president of the Mississippi State Medical Association and the Tri-State Medical Association; member of the state board of health in 1914-1915 and later president; at one time member of the state legislature and sheriff; died August 24, aged 73, of heart disease.

James Chapman Hanley, Hayward, Calif.; College of Physicians and Surgeons of San Francisco, 1907; died in Peralta Hospital, Oakland, August 17, aged 70, of heart disease following an operation for hernia.

Olin B. Hawley, Corning, Iowa; Ensworth Medical College, St. Joseph, Mo., 1906; member of the American Medical Association; on the staff of Greater Community Hospital in Creston; died August 22, aged 65, of heart disease and arteriosclerosis.

Walter Warden Heald, West Lebanon, Ind.; University of Louisville (Ky.) Medical Department, 1911; member of the American Medical Association; served during World War I; county health officer and staff member of Lakeview and St. Elizabeth's hospitals in Danville, Ill.; died August 18, aged 63, of coronary occlusion.

Joseph John Humpal, Omaha; John A. Creighton Medical College, Omaha, 1911; died in St. Joseph Hospital August 9, aged 62, of pneumonia following cholecystectomy.

Willard Hunter Hutchings, Detroit; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1899; at one time on the faculty of his alma mater; served during World War I and on the staff of the Harper Hospital, where he died July 30, aged 74, of myocarditis.

Ernest Mansfield Hyatt ✠ Albertville, Ala.; University of Alabama School of Medicine, University, 1911; past president of the Marshall County Medical Society; served during World War I; died August 8, aged 59, of coronary thrombosis.

Frederick Charles James, Gadsden, Tenn.; Kentucky University Medical Department, Louisville, 1903; member of the American Medical Association; died August 20, aged 74, of cerebral hemorrhage.

Charles Samuel Josephs ✠ New Rochelle, N. Y.; Dartmouth Medical School, Hanover, N. H., 1897; died in Copake August 5, aged 73.

Edward Joseph Kelly, Chicago; University of Illinois College of Medicine, Chicago, 1924; member of the American Medical Association; died in the Alexian Brothers Hospital August 17, aged 52, of congestive heart failure and cirrhosis of the liver.

Georg Kimel, Fall River, Mass.; Medizinische Fakultät der Universität, Wien, Austria, 1921; died July 16, aged 55.

August Edward Kroening, Chicago; College of Physicians and Surgeons of Chicago, 1892; died August 12, aged 77, of cerebral hemorrhage.

Richard Berthold Kruna ✠ White Plains, N. Y.; Medizinische Fakultät der Universität, Wien, Austria, 1902; died July 5, aged 72.

Minnie Jeannette Lawrence, Newark, N. J.; New York Medical College and Hospital for Women, Homeopathic, New York, 1893; died August 19, aged 92, of cerebral hemorrhage and arteriosclerosis.

James Perry Lenfestey, East De Pere, Wis.; Detroit College of Medicine, 1897; served as chief of the draft board and medical examiner for Brown County during World War II; member of the American Medical Association; affiliated with the Wisconsin State Reformatory Hospital in Green Bay; for many years health officer at De Pere; died in Green Bay July 12, aged 74, of coronary thrombosis.

Herman James Lewinsky, Richmond Hill, N. Y.; Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg, Baden, Germany, 1921; member of the American Medical Association; died in Kew Gardens (N. Y.) Hospital August 1, aged 50, of malignant hypertension and coronary occlusion.

William James Lovering ✠ Tucson, Ariz.; Detroit Homeopathic College, 1908; member of the Michigan State Medical Society; died August 22, aged 69, of coronary occlusion.

Philip Sheridan McCaleb, Morris, Okla.; University of Texas School of Medicine, Galveston, 1924; member of the American Medical Association; died July 14, aged 46.

Frank Henry McLaughlin, Newburg, Maine; Medical School of Maine, Portland, 1891; town health officer; died in Togus, July 23, aged 83, of pneumonia.

Lorenzo Dow McPhail, Charlotte, N. C.; University of Maryland School of Medicine, Baltimore, 1900; member of the American Medical Association; served on the staffs of Mercy, Presbyterian, Good Samaritan and Memorial hospitals; died August 11, aged 71, of heart disease.

Robert Daniel Manning, Peekskill, N. Y.; Albany (N. Y.) Medical College, 1908; served on the staff of Peekskill Hospital; died August 16, aged 60, of chronic myocarditis and hypertension.

Leon Joseph Menard, Fall River, Mass.; University of Vermont College of Medicine, Burlington, 1919; member of the American Medical Association; past president of the Fall River Medical Association; formerly member of the city board of health; served during World War I; on the staff of St. Anne's Hospital; died in South Swansea, August 9, aged 55, of Hodgkin's disease.

Maurice Irving Miller ✠ Fairfield, Ohio; University of Cincinnati College of Medicine, 1922; member of the American Society of Anesthetists, Inc.; on the staff of Miami Valley Hospital; died August 22, aged 49, of coronary heart disease.

Laurence Coleman Milstead ✠ Washington, D. C.; Georgetown University School of Medicine, Washington, 1924; specialist certified by the American Board of Pathology, Inc.; member of the Medical Society of the State of Pennsylvania and the American Society of Clinical Pathologists; fellow of the American College of Physicians; served during World War II; pathologist to St. Mary's Hospital, Quincy, where he died August 31, aged 47, of acute myocardial failure.

Joseph Jerome Moch, Los Angeles; University of Texas School of Medicine, Galveston, 1927; served during World War II; affiliated with the Veterans Administration Center in West Los Angeles; died July 10, aged 45.

Arthur Gilman Murphy, Bogalusa, La.; University of Arkansas School of Medicine, Little Rock, 1926; member of the American Medical Association; formerly associated with the Indian Service; on the staff of the Elizabeth Sullivan Memorial Hospital, where he died August 20, aged 58, of carcinoma of the liver and pulmonary embolism.

Bruce Emerson Nevin, Morristown, N. J.; University of Maryland School of Medicine, Baltimore, 1894; died August 14, aged 79, of cerebral hemorrhage, hypertension and cirrhosis of the liver.

Reinhart Gilbert Olson ✠ Minneapolis; Minneapolis College of Physicians and Surgeons, medical department of Hamline University, 1908; served on the staff of Swedish Hospital; died July 12, aged 67, of coronary embolism.

Alonzo S. Phelps, Oklahoma City; Hahnemann Medical College and Hospital, Chicago, 1900; member of the American Medical Association; served as mayor of Martinsville, Ill., where he was president of the First National Bank; died at St. Mary's Hospital in Kansas City, Mo., August 2, aged 75.

Isaiah Lovell Pickard, West Concord, Mass.; Harvard Medical School, Boston, 1896; died August 12, aged 80, of chronic nephritis.

John Kimmel Reticker, Palos Yerdes Estates, Calif.; State University of Iowa College of Medicine, Iowa City, 1895; fellow of the American College of Surgeons; at one time practiced in Quincy, Ill., where he was on the staffs of Blessing and St. Mary's hospitals; died in San Pedro August 18, aged 74, of carcinoma of the pancreas.

David Cook Richardson, Olmstead, Ill.; Chicago Medical School, 1932; found dead in a St. Louis hotel August 19, aged 44, of heat stroke.

Clyde Fenton Ross, Richmond, Va.; University College of Medicine, Richmond, 1905; professor of clinical urology at the Medical College of Virginia; member of the American Urological Association; served as venereal disease control officer of Richmond; died August 2, aged 64.

Samuel Schultz ✠ Coldwater, Mich.; Northwestern University Medical School, Chicago, 1899; veteran of the Spanish-American War; served as city health officer; affiliated with the Community Health Center, where he died August 13, aged 78, following an automobile accident.

George Curtis Shockey, Franklin Park, Ill.; University of Nebraska College of Medicine, Omaha, 1902; member of the American Medical Association; served during World War I; colonel, medical reserve corps, U. S. Army, not on active duty; affiliated with West Suburban Hospital in Oak Park and Westlake Hospital in Melrose Park; died August 7, aged 74, of retroperitoneal carcinoma with metastases.

Henry McLellan Smith, Akron, Ohio; University of Louisville (Ky.) Medical Department, 1888; died August 17, aged 85, of arteriosclerosis.

Landon Boyce Snapp ✠ Bristol, Tenn.; Vanderbilt University School of Medicine, Nashville, 1913; city health officer; died August 19, aged 63, of coronary disease.

William J. Solt, San Pierre, Ind.; College of Physicians and Surgeons, Baltimore, 1896; served as health officer of Starke County; died in Mercy Hospital, Gary, August 15, aged 77, of cachexia following a fractured hip received in a fall.

Thomas Franklin Spurgeon, Frederick, Okla.; Barnes Medical College, St. Louis, 1897; member of the American Medical Association; formerly joint owner of the Spurgeon and Arrington Hospital; died August 14, aged 73, of cerebral hemorrhage.

George Haines Treadwell, Brooklyn; College of Physicians and Surgeons, medical department of Columbia College, New York, 1885; past president of the Kings County Medical Society; died August 3, aged 90.

Franklin A. Turner ✠ Rockford, Ill.; College of Physicians and Surgeons of Chicago, 1894; past president of the North Central Illinois Medical Association; served overseas during World War I; died August 7, aged 80, of coronary occlusion.

Earl Franklin Ward, Toledo, Ohio; Toledo Medical College, 1902; member of the American Medical Association; on the staff of Riverside Hospital; died August 15, aged 70, of cerebral hemorrhage.

William James Warner, Detroit; University of Michigan Medical School, Ann Arbor, 1939; on the staff of the Harper Hospital, where he served an internship and residency; an officer in the medical corps, Army of the United States, during World War II; died August 19, aged 34, of acute respiratory infection.

John Locke Worcester, Seattle; Birmingham Medical College, 1900; member of the American Association of Anatomists; professor of anatomy at the University of Washington School of Medicine; died in the Swedish Hospital August 12, aged 74, of arteriosclerosis, rheumatic heart disease and bronchopneumonia.

Foreign Letters

PARIS

(From Our Regular Correspondent)

Oct. 10, 1947.

Artificial Insemination

The problem of artificial insemination is much discussed by doctors, jurists, theologians and psychiatrists. Dr. A. Chalier has devoted to artificial insemination a part of his recently published book, "Conjugal Sterility." The author considers it an almost unquestionable practice when asked for by man and wife, the condition being that the donor be unknown to both of them and vice versa. The husband is the legitimate father of the child. If it were asked for by a sterile husband without the knowledge of his wife, the connivance of a physician would only in the exceptional instance be ethical, when a much desired maternity would cause the disappearance of nervous troubles of the wife related to this unsatisfied longing. G. Lavallée has given his opinion in a paper in *Le Concours Médical.* He finds exaggerated haste in following in the wake of veterinary medicine. Man invented marriage with all its consequences of morals and responsibility. The psychic factor which plays a role in the natural union is underestimated, and he doubts the quality of the child born through a contrivance. J. Vimeux has presented his results in 46 cases of artificial insemination which brought about 27 pregnancies. Of the 46 artificial inseminations, 33 (obtained with donor's sperm) resulted in 19 pregnancies and the remaining 13 (obtained with the husband's sperm), in 8 pregnancies. Other positive results may still occur, the treatment being continued. The number of failures is explained by the ages of the women: 1 is 30 years of age, 2 between 30 and 35, 7 between 35 and 40 and 4 over 40 years.

In a special edition *Cahiers Laennec,* a review of medical deontology, has opened a discussion on this subject. After an introduction by Dr. Palmer, chief of gynecology at the Paris Faculty, R. Savatier, professor of law at the Poitiers Faculty, discusses the question from the point of view of French law. The consent of the wife is necessary, otherwise the practice would be rape, which is punished by law. The woman who allows herself to be inseminated runs the risk of introducing an intruder in the family; this constitutes adultery, which is not absolved before the courts even by the consent of the husband. Nevertheless, she could not be sued before a court of summary jurisdiction unless the husband brought a civil action against her. From the point of view of civil law, artificial insemination, being similar to adultery, may be grounds for judicial separation or a divorce. On the other hand, repudiation of paternity is not possible on the ground of adultery or impotency, the husband being the legitimate father of the child.

Padre Tesson, professor of moral theology at the Paris Catholic Faculty, states that the collection of sperm in a condom, by masturbation or by interrupted coitus are considered as irreconcilable with morals; in 1929 the Holy Office declared unlawful the collection of sperm through masturbation to permit examination for diagnosis of blennorrhagia; this seems applicable to the case of artificial insemination. The author considers heteroinsemination an essential violation of the law governing marriage.

Gabriel Marcel set forth the danger in the impossibility of foreseeing the reaction of the husband in the future and also the effect on the stability of the home. For him, the situation is close to the absurd and grotesque, the husband financing this intervention and participating in the expectation of the child. He foresees the advent of an anonymous world.

Photographic Study of Blood Coagulation in Vitro

Professor Guillot has perfected a photographic process which permits one to follow the evolution of the fibrin coagulum during coagulation in vitro. An ultramicroscopic image of the coagulum is obtained in which there appear "centers," where fibrils are more narrowly anastomosed and entangled. Those centers would seem to be areas of excessive adsorption of thrombin. In normal coagulation numerous small centers, almost confluent, are observed and the serum contains active prothrombin and thrombin; in hemophilic coagulation centers are rare and the serum contains active prothrombin but no thrombin at all. In exceedingly rapid coagulation an increase of the number of centers is observed and there is only active thromboplastin and no thrombin in the serum. As a rule, the more rapid the coagulation, the more rapid is also the adsorption of the excess thrombin by the coagulum. With this process the author has been able to detect cases in which no other laboratory method indicated a propensity to hemorrhage.

The Franco-Czechoslovak Medical Days

For the first time since the war a large number of Czech doctors, among them many professors of the faculties of Bohemia, Moravia and Slovakia, have come to France. Conducted by Professors Stolz and Perner, president and general secretary of the Association "France-Czechoslovakia," they were received by Professors Binet and Lemaitre at the faculty's great amphitheater, where studies began. In a course of lectures Professor Kocher, Kafka, Binet and Mauric and Dr. Braine dealt with perspiration, thermic regulation, allergy, intestinal anaphylaxis and cryptorchidism. At the surgical clinic for children of the Enfants-Malades hospital, Professors Zahradníček and Leveuf studied the pathogenesis and the treatment of congenital luxation of the hip. Members of the congress attended lectures and experiments in Professor Pasteur Vallery-Radot's ward and laboratories; they visited the Pasteur Institute and clinical services of the faculty. On the occasion of the sixth centenary of the Charles the Sixth University, French doctors will pay a visit to Czechoslovakia.

Portuguese Doctors in Paris

One hundred and fifty Portuguese doctors have been received by the France-Portugal Committee. France was represented by Professors Leriche, Justin-Besançon and Beclere, and Drs. J. A. Huet and Godlewski. The Portuguese doctors were received at the Town Hall, the Pasteur Institute, the Faculty of Medicine and the Council of the Order of Doctors.

ITALY

(From Our Regular Correspondent)

FLORENCE, Sept. 27, 1947.

Meeting of Italian Gastroenterologists

At a recent meeting of Italian Gastroenterologists at Salsomaggiore, two subjects were on the agenda: megaesophagus and duodenitis. Before starting the scientific session, the resignation of Professor Cesare Frugoni of the University of Rome as president of the Italian Gastroenterological Association was accepted because of his numerous occupational duties. Professor Gasbarrini of the University of Bologna was then elected president. The next assembly will be in Chianciano-Terme in the spring of 1948 when reports will be presented on two subjects, blood and the alimentary canal.

The Megaesophagus

Professor Bonadies, Rome, spoke on megaesophagus from the medical point of view while Professor Pieri, Rome, spoke from the surgical point of view. Bonadies discussed various theories proposed to explain megaesophagus, namely, the embryologic theory, the congenital theory of Bard, that of cardiospasm and

phrenospasm, oligoesophagus and the theory of achalasia of Hurst. The speaker considered the last one the most convincing, i. e. the theory of incoordination of various segments of the organ. With reference to diagnosis, he emphasized the importance of exploring the esophagus with a soft and semirigid bougie by means of esophagoscopy.

In regard to conservative treatment Professor Bonadies said that preparations of belladonna have no effect; he emphasized the satisfactory response to mechanical dilation using the semirigid bougie, gradually and carefully under esophagoscopic and roentgen ray guidance. This method of treatment will be sufficient in the majority of cases, and in the absence of favorable results one may take recourse to mercury bougies or to rubber or metal tubes.

Professor Pieri summarized the still incomplete knowledge of the innervation of the esophagus. He agreed that direct intervention on various sectors of the organ has not given the expected results. He had obtained only temporary improvement from intervention on the terminal segment of the esophagus in 3 cases.

Among various types of intervention suggested, two procedures seem to stand the test, namely, extramucosal cardiotomy and bloodless divulsion by means of suitable bougies. The speaker has performed cardiotomy in 21 patients by employing a technic as follows: the approach to the cardia is made by a median supraumbilical laparotomy; after sectioning the peritoneum at the level of the fold of the diaphragmatic kink, the inferior portion of the esophagus is exposed and drawn downward. At the median line an incision about 6 cm. long is made in the tunica muscularis of the esophagus exposing the submucosa. The speaker advises covering the residual bleeding surface with a free transplant from the omentum to prevent the formation of large adherent cicatrizations, which may cause stenosis. Occasional failures of the operation are due usually to the insufficient length of the incision in the tunica muscularis of the esophagus.

All 21 patients operated on by Professor Pieri made a complete recovery with definite disappearance of the disturbance from two to fourteen years according to follow-up examinations.

Duodenitis

Professor Sotgiu, University of Bologna, spoke on the pathology and symptomatology of duodenitis, and Professor Viviani, Bologna, gave a report as radiologist.

Professor Sotgiu stated that there had been included under the term duodenitis certain forms which are not exactly inflammatory but rather angioneurotic dystrophic, for which duodenopathy would be a better term. In addition to ulcerative, phlegmonous and uremic forms of duodenitis of only limited interest, there may be instances of simple chronic duodenitis which are analogous to chronic gastritis. Their occurrence has been demonstrated by numerous observations during surgical operations. In general one has to deal with duodenal changes associated with chronic gastritis or other abdominal lesions with which there may be a genetic relationship.

The importance of the duodenal lesion as the cause of the clinical syndrome varies; in certain cases this factor is negligible, in others it may be considerable. Primary forms may not be demonstrated easily; based on the large number of the author's personal observations, they are much less frequent than the associated forms. The clinical aspect of duodenitis is not characteristic, and the nature of the disease may be recognized only by excluding in every single case all other possible causes and by gathering data (roentgenologic examination, duodenal tubage) which may encourage the suspicion. The type which is best known is the duodenal ulcer type, i. e. the pseudoulcerative variety. Many patients are operated on because they are considered to have ulcer, but surgical intervention does not reveal its presence. Positive roentgenologic observations may be made in patients with simple dyspeptic disturbances of hypopeptic or mixed type. There are a subicteric variety and a hemorrhagic variety of duodenitis. The speaker also believes that there is a silent type without symptoms and roentgenologic findings in which a decisively pathologic report of the duodenal juice is sufficient for a diagnosis of duodenitis.

Although the clinical manifestations cannot be evaluated easily, Sotgiu discussed important aids with which to form an opinion as to the duration and the rhythm of the disturbance, the general condition and the occasional complications which are in clear genetic relationship with the duodenitis (icteric and pancreatic episodes).

Professor Viviani, radiologist, presented a large series of roentgenograms which demonstrated definitely certain manifestations of duodenitis.

Professors Gaetani and Tavernari's report on the pathologic anatomy of duodenitis may be summarized as follows: 1. Primary isolated duodenitis is rare; duodenitis is almost always associated with gastritis. This confirms the functional and pathologic unity by which the stomach and duodenum are bound to each other. 2. The appearance of infiltrations of the lymphogranulomatous-plasmohistiocytic type in the submucosa of the duodenum represents a diagnostic element which makes duodenitis likely, especially if the infiltrations involve extensively the muscular and serous portions. 3. In the solar plexus of patients whose history reveals previous episodes of gastrointestinal disturbances one may observe pathologic changes which sometimes reach the entity of sympatheticoganglionitis. Such observations deserve considerable attention because their study may clarify some doubt whether one is dealing with changes in the solar plexus, duodenitis or duodenal ulcer. 4. The data presented by the speakers showed that there may be a causal relation between appendicopathy, duodenitis and periduodenitis. 5. Some cases which the speakers observed confirmed the results obtained by other authors associated with Italian university schools (Frugoni, Greppi, Ascoli and others) with regard to pathogenic links between gastroduodenitis and tumors of the spleen. The speakers also observed a slight increase in weight of the spleen associated with mild follicular and pulpal lymphadenia in patients with gastroduodenopathy for which structural-functional changes of the vasal network of the portal vein may be responsible.

TURKEY

(From Our Regular Correspondent)

ANKARA, Sept. 10, 1947.

Hospital Organization in Turkey

Before the republic in 1923 the national department of health was attached to the Ministry of the Interior. In the provinces the governor and in municipalities the mayor are responsible for the organization, administration and control of hospitals. The Istanbul Charity Hospital established almost two hundred years ago as a memorial endowment by the Mother Sultan Bezmi Alem was and still is controlled and operated by that trust fund. The university hospitals affiliated with the medical school were under the administration of the Ministry of Education. Foreign and minority hospitals had and still have their independent administrations.

With the advent of the republic and with the establishment of the Ministry of Health and Social Assistance all health institutions came under its administration. The ministry controls the budgets and makes all appointments, transfers and dismissals of hospital personnel such as chief physicians, specialists, chemists, pharmacists, nurses and midwives. According to a law passed in 1926 neither the governor of the province nor the mayor of the city can do anything in these matters.

There are three kinds of administration of governmental institutions of health and social assistance in Turkey: governmental, provincial and municipal. The funds of these institu-

tions come from three sources, the government budget, the provincial budget and the municipal budget. During the twenty-four years of the republic the number of hospitals and beds have gradually increased, the standards of treatment and care of patients have been raised, modern equipment has been procured and there are more and better specialists. Much is done to safeguard the well and treat the sick, but the number of hospitals and hospital beds and the desired standards have not yet been attained. The second world war has largely been responsible for this. To keep a mobilized army of one million men, every eighteenth person being under arms, resulted in a shortage of workers; the lack of all kinds of building material, transportation and imported hospital and scientific equipment, and last but not least the inflation. For the same reason the foundation stone of the 1,000 bed University hospital as part of the Ankara Medical Center designed by Professor Jean Walter in 1937 was not laid until 1946. Construction of the 300 bed model hospital at Trabzon was begun in 1936 but patients could not be admitted until 1947. The Dr. Behcet Uz Children's Hospital at Izmir (Smyrna), named after the present minister of health who was mayor of that city for many years, was opened in April 1947 exactly nine years after the laying of the foundation stone. The corner stone of the 300 bed Ankara Maternity Hospital was laid in 1938; the five story building is finished but still without equipment.

The government pays for the administration of thirty-six hospitals attached to the Ministry of Health; model hospitals in Ankara, Istanbul, Sivas, Diyarbekir, Erzurum and Trabzon; three hospitals for nervous and mental diseases; two children's hospitals; two isolation hospitals; one tuberculosis sanatorium; a hospital for bone tuberculosis; one leprosarium, and twenty small hospitals in the provinces. These institutions have 6,670 beds, of which 5,906 are free; for 764 a fee is charged. There are sixteen trachoma hospitals with 225 beds and seven malaria hospitals with 140 beds.

Fifty-eight hospitals with 3,242 beds are under provincial administration and are located in the provincial capitals and large towns. There are fifteen hospitals with 1,454 beds under municipal administration, the majority in Istanbul. There are ten hospitals under foreign administration in Turkey, the American Admiral Bristol Hospital and the English, German, French, Italian and Bulgarian hospitals with 681 beds collectively, which are located in Istanbul, Izmir and Gaziantep. Istanbul and Izmir have minority hospitals with 729 beds, and under the administration of societies there are three hospitals with 270 beds. A 250 bed hospital in Istanbul is under the administration of the Vakif Memorial Fund. The majority of the seventeen private hospitals with 473 beds are in Istanbul, a few in Ankara and Izmir. The iron, copper, coal, tobacco, paper, wool and cotton industries operate seventeen hospitals with 637 beds for their employees. The Ministry of Education operates a 190 bed preventorium and a 120 bed tuberculosis sanatorium for teachers and students in Istanbul. The government railway and shipping lines operate a 205 bed hospital, and the prison administration, a 60 bed hospital in Istanbul.

Attached to the Ministry of Health and entirely supported from its funds are fourteen maternity hospitals with 355 beds located in principal provincial towns. Three municipalities operate small maternity hospitals with 75 beds. At the Bakirköy maternity hospital there are 9 beds for the use of the Child Welfare Society. There are seven private maternity hospitals with 97 beds in Turkey.

The Ministry of Health operates one hundred and eighty-five dispensaries. A 5 bed ward is attached to each. These dispensaries are all over the country. Beds and medicaments are free in all dispensaries and maternity hospitals. The provincial governments also operate such dispensaries, of which there are sixty-four. The municipalities operate thirty-nine dispensaries with 167 beds. There are four foreign and minority dispensaries with 50 beds, and societies operate twenty-six, no beds attached. There are forty-one dispensaries with 289 beds operated by industries. The Ministry of Health operates ten Health Centers with 55 beds; the funds for these centers come from the government. Two municipalities operate health centers.

The Ministry of Health operates seven tuberculosis dispensaries where diagnosis and treatment, x-ray, pneumothorax and collapse therapy are free. There are two venereal disease hospitals with 25 beds and a 25 bed hospital for the prevention and treatment of hydrophobia. Four municipalities operate asylums with 845 beds for the aged poor. Three asylums with 430 beds for the aged poor are under foreign administration. In Istanbul, Ankara and Izmir there are four day-nurseries with 240 beds. Twelve towns have child welfare clinics operated by municipalities and the Child Welfare Society.

There are today in Turkey, military and naval hospitals not included: one hundred ninety-two hospitals with 15,401 beds; twenty-five maternity hospitals with 536 beds; three hundred sixty-eight dispensaries with 1,778 beds; twelve health centers with 55 beds; seven asylums for the aged poor with 1,275 beds; four day nurseries with 240 beds, and twelve child welfare clinics without beds.

Taking into consideration that according to the 1945 census Turkey has a population of 18,860,222, the per capita supply of hospital beds is inadequate. Of the available 15,401 beds 6,832 are in Istanbul, which explains why at all seasons so many patients from the interior come to Istanbul for treatment.

In 1923 the allocation for the Ministry of Health and Social Assistance was 1.8 per cent of the budget of the national government. Since 1923 it has gradually been increased. For the year 1947 the allocation was 42,007,755 pounds Turkish, or 3.69 per cent of the government budget.

Allocation for provincial health and social assistance for the year 1947 amounted to 7,012,106 pounds Turkish, or 8.51 per cent. The municipalities contributed 13,123,970 pounds Turkish, or 40.33 per cent of their budgets. The Ministry of Public Works allocated 2,527,000 pounds Turkish for repair of hospitals and minor construction, the Ministry of Finance 370,249 pounds Turkish for ambulances or other means of transportation and food supplies for certain provincial hospitals.

Because health and hospital insurance has not yet been established in Turkey, hospitals are always filled to capacity: a long waiting list is inevitable, especially for admittance to tuberculosis hospitals and sanatoriums. In all these institutions patients receive free treatment and care and there is no charge for surgical operations. The augmentation of railway lines during the last two decades has resulted in pushing the line of health education further into the interior and has obliged the government to increase health institutions there.

For this reason the Ministry of Health has prepared and put before the government a ten year National Health Plan. At the same time a bill has been prepared for the establishment of health and hospital insurance. A copy of the draft was forwarded to all ministries for joint consideration. According to the National Health Plan the numbers of beds of general and maternity hospitals and sanatoriums is to be trebled, a considerable number of new institutions are to be established and old ones enlarged.

Under the National Health Plan there are to be seven zones in the principal cities and towns, where the following institutions are to be established: Seven 400 to 500 bed general hospitals; seven 300 bed hospitals for nervous and mental diseases; seven 300 bed children's hospitals; seven 200 bed maternity hospitals to be affiliated with a school for midwives; seven 250 to 300 bed tuberculosis sanatoriums; seven 100 bed preventoriums; fifty tuberculosis dispensaries; seven venereal disease dispensaries and 50 bed hospitals; seven 700 bed convalescent

homes; seven homes for the aged, the number of beds according to circumstances; seven 100 bed institutions for the blind and the deaf mutes; seven 100 bed isolation hospitals; two tropical institutes; seven local institutes of hygiene; seven day nurseries; seven health museums; one thousand health centers; seven disinfecting and delousing stations; seven schools for midwives, nurses and sanitary inspectors, and seven personnel residences.

The estimated cost of the construction of these institutions, the medical equipment and all kinds of motor transportation is 623,796,325 pounds Turkish.

Correspondence

EPIDEMIOLOGY OF LEPROSY

To the Editor:—Some facts have been accumulated in the United States which bear on the discussions of the epidemiology of leprosy which have appeared in THE JOURNAL (Oct. 19, 1946, p. 407; Dec. 14, 1946, p. 947; Aug. 9, 1947, p. 1261).

The possibility that generalized sarcoidosis of Boeck may be caused in some instances by Mycobacterium leprae had been suggested by the clinical and pathologic resemblance of certain cases of sarcoid to tuberculoid leprosy. The results of lepromin (Mitsuda) tests in sarcoid were reported in the *American Journal of Tropical Medicine* (**25**:523-535 [Nov.] 1945). North Carolina is an area where leprosy is not endemic—at least, clinical cases are not recognized; cases of sarcoid are seen in adults with some frequency. No case of sarcoid under study in North Carolina has later been diagnosed as leprosy; the experience in Louisiana and Texas may be different. Sarcoid is an uncommon to rare disease in children, a fact which would increase the weight of evidence that sarcoid is not a form of tuberculoid leprosy which would be acquired by exposure to a leprous parent.

In the attempt to determine the incidence of positive reactions to lepromin in a cross section of the population in a nonendemic area, a cross reaction was found to the lepromin antigen in tuberculous patients or patients with strongly positive tuberculin reactions. In a study of the incidence of subclinical leprosy in an area where the disease is slightly endemic, this cross reaction should be kept in mind. Lepromin has been largely given up as a diagnostic antigen in areas where leprosy is heavily endemic (THE JOURNAL, April 17, 1943, pp. 1264-1269).

It is known that patients with sarcoid and leprosy frequently die with tuberculosis; the resistance of tissue involved in sarcoid apparently is lowered in a fashion similar to the reduction in resistance to tuberculosis caused by silicosis. This fact emphasizes the need for ruling out tuberculosis in attempts to diagnosis leprosy by the lepromin reaction. The common antigens in the two organisms make this differentiation technically difficult.

A different interpretation might be made of some of the known facts in leprosy from that made by Dr. Manalang. The presence of acid-fast bacteria in mononuclear cells in cases of leprosy may indicate that the monocyte furnishes some necessary growth substance for the bacteria; this theory might explain why the organism cannot be grown in artificial mediums. The suggested pathogenesis of leprosy by repeated skin to skin exposure over long periods of time would suggest that animal experiments should be performed to reproduce these conditions. Most attempts at transmission of the disease in animals have consisted of a single inoculation of scrapings from leprous patients; it might be worth while to do repeated inoculations over a period of weeks or months. Such experiments must be done in an endemic area where organisms are readily available.

GEORGE T. HARRELL, M.D., Winston-Salem, N. C.

(Dr. Harrell's letter was submitted before publication to Dr. H. W. Wade, medical director, Leonard Wood Memorial, who made the following comments.—ED.)

To the Editor:—The following comments may be of help in clarifying certain points discussed in recent correspondence in THE JOURNAL.

It would seem that Dr. Manalang is taking up the idea advanced long before the war by Rabello Junior that "sarcoid" may be a peculiar form of leprosy, or at least that the leprosy bacillus as well as other agents can produce the sarcoid syndrome (*Internat. J. Leprosy* **5**:483, 1937; also, note by Reensteirna, page 433, and my editorial, page 503, in the same issue). Decidedly against the hypothesis is the fact, among others, that leprosy does not exist at all as an endemic disease in certain European countries where sarcoid is common.

"Boeck and Mazzi found acid-fast bacilli in nasal secretion." The pitfalls of contamination by air-borne or water-borne acid-fast organisms in the diagnosis of leprosy are well known. The case cited by McCarthy, according to Kryle's original report which was used in preparing the manuscript of the monograph, was reactive tuberculoid leprosy and not lupoid.

Positive reactions to the lepromin test are obtained in varying proportions of nontuberculous as well as tuberculous persons in nonendemic regions (Dubois in Belgium, *Internat. J. Leprosy* **5**:124, 1937; Dharmendra in the Punjab, *ibid.* **10**:164, 1942; Bechelli, Keil and Rothberg in NewYork, *ibid.* **14**:176, 1946, and Convit, Azulay, Bermudez and Salgado in New York, *ibid.* **12**:60, 1944). One report on "The Lepromin Reaction in Normal Dogs has been published by Wade (*ibid.* **9**:39, 1941).

Since its peculiarities were appreciated, the lepromin reaction has never been regarded among leprologists as a diagnostic test, especially because of positive results in varying percentages of nonleprous persons. It is accepted as of definite significance with respect to prognosis, because of the negative results in malignant lepromatous leprosy and positive results in benign neural-type cases, especially those of the tuberculoid variety. In the neural cases with less tissue reactivity—those with flat macules—and early cases difficult to classify (the Brazilians' "incharacteristic" group), those in which patients fail to react positively are held to be liable to turn lepromatous.

With regard to the thesis of Dr. Manalang that prolonged skin to skin contact is the manner of infection, a report now in press with the *American Journal of Pathology* should convince any reasonable skeptic that infective inoculation can be made in adult man. Two young Marines, while in Australia, were tattooed on the left forearm by the same operator and at the same time. Three years later, after returning to this country, in both there developed leprotic lesions in the tattooed areas, and in one of them two small secondary lesions developed higher on the same arm. I have recently seen one of the patients and the beforetreatment photographs and biopsy sections of the two. In both cases the histology was tuberculoid and acid-fast bacilli in small numbers were demonstrated. Any one who denies that adults can acquire leprosy will have to exercise the height of ingenuity in argumentation to pass that one off. It is most likely that the famous Father Damien was infected in adult life in Kalaupapa and not in childhood in Belgium, where leprosy does not exist.

Finally, it is true that most, but not all, attempts to infect animals have been by single inoculations. Usually when repeated inoculations have been made, the reactions to the later ones have been accelerated and exaggerated (Chaussinand, *Internat. J. Leprosy* **9**:203-207, 1941). I have obtained similar sensitization in dogs injected with lepromin (unpublished data).

H. W. WADE, M.D., New York.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Naturopathy: Licenses Must Issue After Approval by Naturopathic Examining Board.—The plaintiff filed a mandamus proceeding to compel the issuance to him of a certificate to practice naturopathy. From a judgment for the plaintiff, the defendant, the Health Commissioner, appealed to the Supreme Court of Errors of Connecticut.

The state board of naturopathic examiners is permitted by statute (Sec. 1127 c, Cum. Supp. 1935) to ". . . enter into agreements of reciprocity with a board of naturopathic examiners in any other state whose requirements shall be equal to those of this state." Accordingly an agreement was entered into with the board of naturopathic examiners of South Carolina, as a result of which the Connecticut board approved the plaintiff's application for a reciprocity certificate without examination. Another section (Sec. 2767) of the statutes provides in part: "Any person who shall have . . . obtained a certificate of approval from said board [of naturopathic examiners] shall, upon filing such certificates and statements as herein provided with the state department of health, receive from said department, upon the payment of $2, a certificate of registration, which certificate shall include a statement that the person named therein is qualified to practice naturopathy." The defendant, however, refused to issue the necessary certificate to the plaintiff on the ground that the reciprocity agreement was illegal because the requirements in South Carolina are not equal to the requirements in Connecticut in that South Carolina does not have a board comparable to the Connecticut State Board of Healing Arts before which, as in Connecticut, a written examination of the applicant is provided for, nor is an applicant in South Carolina required to pass a written examination before the board of naturopathic examiners, as here. The defendant also alleged that the United States School of Naturopathy, from which the plaintiff claimed to have graduated, was not an approved naturopathic college or institution recognized as legal and reputable in this state. The plaintiff, however, contended that the defendant's duty to issue the certificate was ministerial and that he had no discretion in the matter.

The Supreme Court pointed out that "the writ of mandamus issues when the duty of which enforcement is sought is the performance of a precise definite act, in relation to which the respondent has no discretion, when the right of the person applying for it is clear and he is without other adequate remedy." Continuing, the court said that while there is no doubt that the court, in a mandamus proceeding, had certain discretionary power and though it be assumed, for the purpose of the decision in this case, that matters affecting its exercise may properly be alleged as a defense, the question remains whether the allegations furnish a factual basis sufficient to permit any exercise of this discretionary power by the court. It is the naturopath, not the board of naturopathic examiners, who is the plaintiff in this case. The defendant's allegations constitute a collateral attack on the action of the board but do not impugn the conduct, character or professional ability of the plaintiff himself. To hold, under such circumstances, that the right given the plaintiff by statute to receive a certificate of registration should not be enforced, solely because of such infirmity in the prerequisites to the certificate of approval as was here alleged, would be "usurping the functions of the legislative department in making practical repeal of the statute." It is only proper to observe, however, the court concluded, that statutes of the nature here involved, designed as they are to safeguard the public from practitioners not properly qualified, should be strictly complied with by those charged with their administration, and if there is such disregard of their provisions as is here alleged it not only is to be condemned but, if requisite proof is available, suggests the propriety of proceedings for the suspension or removal of those guilty thereof. The judgment in favor of the plaintiff was affirmed.—*State ex rel. Lacerenza v. Osborn, 52 A. (2d) 747 (Conn., 1947).*

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and the Examining Boards in Specialties were published in THE JOURNAL, Nov. 8, page 663.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination.* Montgomery, June 22-24, 1948. Sec., Dr. D. G. Gill, 519 Dexter Ave., Montgomery 4.

COLORADO: * Denver, Jan. 6-9. Final date for filing application is Dec. 20. Sec., Dr. J. B. Davis, 831 Republic Bldg., Denver 2.

DELAWARE: *Examination.* Dover, Jan. 13-15. *Endorsement.* Dover, Jan. 20. Sec., Dr. J. S. McDaniel, 229 S State St., Dover.

FLORIDA: * *Examination.* Jacksonville, Nov. 25-26. Sec., Dr. Harold D. Van Schaick, 6675 Windsor Lane, La Gorce Island, Miami.

HAWAII: *Examination.* Honolulu, Jan. 12-15, 1948. Sec., Dr. S. E. Doolittle, 881 S. Hotel St., Honolulu, T. H.

IDAHO: Boise, Jan. 13-15. Sec., Miss Estella S. Mulliner, 355 State House, Boise.

INDIANA: *Examination.* Indianapolis, June 1948. Sec., Board of Medical Registration and Examination, Dr. Paul R. Tindall, K of P Bldg., Indianapolis.

IOWA: * *Examination.* Des Moines, Dec. 1-3. Act. Dir., Div. of Licensure, Dr. Walter R. Bierring, 1027 Des Moines St., Des Moines.

KANSAS: Topeka, Dec. 3-4. Sec., Board of Medical Registration and Examination, Dr. J F Hassig, 905 N. 7th St., Kansas City.

LOUISIANA: New Orleans, Dec. 4-6. Sec-Treas., Dr. Roy B. Harrison, 1507 Hibernia Bank Bldg., New Orleans.

MARYLAND: *Medical Examination.* Baltimore, Dec. 9-12. Sec., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore. *Homeopathic Examination.* Baltimore, Dec. 9-10. Sec., Dr. J. A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: *Examination.* Boston, Nov. 18-21. Sec., Dr. H. Q. Gallupe, 413-E State House, Boston.

MICHIGAN: * *Examination.* Lansing, Nov. 19-21. Sec., Board of Registration in Medicine, Dr. J. E. McIntyre, 203 Hollister Bldg., Lansing.

MISSISSIPPI: *Endorsement.* Jackson, Dec. 1947. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

NEBRASKA: * *Examination.* Omaha, Dec. Dir., Bureau of Examining Boards, Mr. Oscar F. Humble, 1009 State Capitol Bldg., Lincoln.

NEW HAMPSHIRE: *Examination.* Concord, March 11-12. Sec., Board of Registration in Medicine, Dr. John S. Wheeler, 107 State House, Concord.

NEW YORK: *Examination.* Albany, Buffalo, New York, Syracuse, Feb. 16-19. Sec., Dr. J. L. Lochner, Jr., Education Bldg., Albany.

NORTH DAKOTA: Grand Forks, Jan. 6-9. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OHIO: *Examination.* Columbus, Dec. 2-4. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OREGON: * *Examination.* Portland, Dec. 6. Admin., Board of Higher Education, Miss L. M. Conlee, Univ. of Oregon, Eugene.

PENNSYLVANIA: *Examination.* Harrisburg, Jan. 1948. Acting Sec., Board of Medical Education and Licensure, Mrs. M. G. Steiner, 351 Education Bldg., Harrisburg.

SOUTH DAKOTA: * Pierre, Jan. 20. Sec., State Board of Health, Dr. Gilbert Cottam, Capitol Bldg., Pierre.

UTAH: *Examination.* Salt Lake City, June, 1948. Asst. Dir., Department of Registration, Miss Rena B. Loomis, 324 State Capitol Bldg., Salt Lake City.

VIRGINIA: Richmond, Dec. 4-6. Sec., Dr. K. D. Graves, 306 Medical Arts Bldg., Roanoke.

WEST VIRGINIA: Charleston, Jan. 12-14. Comm., Public Health Council, Dr. N. H. Dyer, State Capitol, Charleston 5.

WYOMING: *Examination.* Cheyenne, Feb. 2. Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARIZONA: Dec. 16. Sec., Mr. Francis A. Roy, Science Hall, University of Arizona, Tucson.

COLORADO: *Examination.* Denver, Dec. 17-18. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver.

IOWA: Des Moines, Jan. 13, April 13, July 13, Oct. 12. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids.

MICHIGAN: *Examination.* Ann Arbor and Detroit, Jan. 9-10. Sec., Miss Eloise LeBeau, 101 N. Walnut St., Lansing.

OKLAHOMA: Spring 1948. Sec., Dr. Frank Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

OREGON: *Examination.* Portland, Dec. 6. Admin., Mr. C. D. Byrne, Univ. of Oregon, Eugene.

SOUTH DAKOTA: Aberdeen, Dec. 5-6. Sec., Dr. G. M. Evans, Yankton.

WISCONSIN: *Examination.* Milwaukee, Dec. 6. Sec., Prof. W. H. Barber, Scott and Watson Sts., Ripon.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted.

American Heart Journal, St. Louis

34:151-308 (Aug.) 1947

*Clinical Syndrome Associated with Pulmonary Arteriovenous Fistulas, Including Case Report of a Surgical Cure. H. B. Burchell and O. T. Clagett.—p. 151.
Effect of Cyanide on Electro-Cardiogram of Man. J. Wexler, J. L. Whittenberger and P. R. Dumke.—p. 163.
*Circulatory Blood Volume of Some Organs. G. Nylin.—p. 174.
Intrusion of Aortic Root into Mitral Orifice in Hypertensive Disease: Radiologic Observations on Living Persons. F. Windholz and C. E. Grayson.—p. 180.
*Congenital Single Coronary Artery in Man: Report of 9 Cases, One Having Thrombosis with Right Ventricular and Atrial (Auricular) Infarction. J. T. Roberts and S. D. Loube.—p. 183.
Method of Determining Effective Therapeutic Level in Treatment of Subacute Bacterial Endocarditis with Penicillin: Preliminary Report. J. G. Schlichter and Helen Mac Lean.—p. 209.
Coagulation of the Blood in Lusteroid Tubes: Study of Normal Persons and Patients with Arterial or Venous Thrombosis. A. H. Kadish.—p. 212.
Coagulation Time of Blood in Lusteroid Tubes: Study of Patients Receiving Dicumarol. A. H. Kadish.—p. 225.
Electrocardiographic Study of 114 Consecutive Cases of Trichinosis. S. D. Solarz.—p. 230.
Diseases Associated with Low Capillary Resistance. E. E. Brown.—p. 241.
Electrocardiogram in Man During Episode of Chill and Fever Induced by Intravenous Typhoid Vaccine. A. S. Freedberg, M. J. McManus and M. D. Altschule.—p. 249.

Pulmonary Arteriovenous Fistula.—Burchell and Clagett discuss the clinical syndrome consisting of cyanosis, clubbing of fingers and polycythemia and its relation to pulmonary arteriovenous fistula. They stress the importance of the diagnosis in view of the availability of surgical cure. They present the case of a youth, aged 20, with the unusual complication of collateral circulation to the thoracic wall. The roentgenologic data, the surgical exploration and the pathologic data are described. Lobectomy was followed by cure. According to the authors this is the ninth case of pulmonary arteriovenous fistula to be recognized clinically and the fifth patient to be cured by surgical treatment.

Circulatory Blood Volume of Some Organs.—Nylin points out that the method elaborated by Hevesy and his collaborators for labeling red blood corpuscles with radioactive phosphorus has made possible certain studies of the circulatory system which had been impossible before. He describes the determination of the circulatory blood volume of one lung before extirpation in 3 cases of bronchogenic carcinoma. The mean value of the circulatory blood volume through one lung was 17 per cent of the total circulating blood volume. He also investigated the circulatory blood volume of the lower limbs and found it to be 13.6 per cent of the total circulating blood volume.

Congenital Single Coronary Artery in Man.—Roberts and Loube add 9 new cases of absence of one coronary artery to 22 previously reported cases of this anomaly. Three of the 9 patients had occlusion at one or more points of the single coronary artery, with resultant myocardial infarction. One patient had massive infarction of the right ventricle and auricle, and a unique series of electrocardiograms was recorded. These indicate that atrial infarction should be suspected with the occurrence of: (1) atrial arrhythmias, especially if changing rapidly in type; (2) atrioventricular block; (3) changing contour of P or f waves; (4) changing contour of the P-T_A segment or interval and of the atrial T wave (T_A) if evident, as it may be with dissociation or prolonged PR intervals. The anomaly is compatible with normal cardiac function but adds extra hazard in the presence of coronary artery disease, because the available collateral anastomoses must be utilized early in life.

American Journal of Medical Sciences, Philadelphia

214:121-232 (Aug.) 1947

Gynecomastia Due to Infectious Hepatitis of Homologous Serum Type. G. Klatskin and E. M. Rappaport.—p. 121.
*Variolation as a Principle: Immunization in Experimental Poliomyelitis with Active Virus Under Autarceologic Protection of Estrogenic Substance. W. L. Aycock and F. J. Curley.—p. 128.
Influenza at an Army Camp in 1945-1946. M. M. Sigel and W. A. Davis.—p. 132.
Endocarditis Due to Type B Hemophilus Influenzae Involving only Tricuspid Valve. W. B. Martin and W. W. Spink.—p. 139.
Streptomycin Therapy of Tularemia in U. S. Army Hospitals. E. J. Pulaski and W. H. Amspacher.—p. 144.
Further Observations on Poliomyelitis in Pregnancy. M. J. Fox and H. A. Waisman.—p. 148.
Pa-Pin (Transient Paralysis) Complicating Asiatic Cholera. K. Huang and Y. Mao.—p. 153.
Relative Toxicity of Atropine and Novatrine in Man. A. R. Berger and J. Ballinger.—p. 156.
*Concentrated Aqueous Heparin: New Form of Intramuscular Administration. D. Stats and H. Neuhof.—p. 159.
Degenerative Bone Disease: Findings in 18 Cases with Posterior Spurs of Lumbar Vertebra. W. M. Solomon.—p. 163.
Role of Pulmonary Vessels in Reflex Control of Blood Circulation. V. V. Parin.—p. 167.
Observations on Velocity of Blood in Normal Men in Basal State. G. R. Meneely and A. Segaloff.—p. 176.
Further Consideration of the QT Interval. J. S. Robb and W. B. Turman.—p. 180.
Effect of Thyroid Hormone in Tissue Respiration. R. H. Williams and J. L. Whittenberger.—p. 193.
Vagotomy for Peptic Ulcer. D. A. Cameron.—p. 202.
Ocular Lesions in Brucellosis. H. P. Wagener.—p. 215.

Variolation as a Principle.—According to Aycock and Curley variolation is perhaps the oldest specific immunizing procedure. It was widely used during a whole century. It might well have led to an efficacious preventive procedure had it not been supplanted by vaccination. Variolation as a principle (immunization through mild disease by inoculation of the "prepared" patient with active virus) should offer even greater possibilities in disease in which subclinical immunization is the rule and disease the exception. There are indications that in poliomyelitis factors in the host, rather than virus or exposure factors, may be a major determinant as between the development of the frank disease or of subclinical immunity on exposure to the virus. Studies of the nature of these autarceologic factors have led to experiments. The authors found that in both estrogen-prepared and untreated control mice subcutaneous injection of active poliomyelitis virus, when it did not result in the frank disease, produced subclinical immunity. However, a greater proportion of estrogen-treated mice failed to contract the disease, and consequently the number of mice in which there developed subclinical immunity was greater in the estrogen-treated animals than in the controls. Preparation of the host with estrogenic substance effected a decrease in the production of disease by active virus and an increase in the occurrence of subclinical immunization. Neither these experiments nor any of the other cited examples of enhancement of host resistance to experimental infection begin to approach present day standards of safety.

Concentrated Aqueous Heparin.—A concentration of 100 mg. of heparin in 1 cc. of solution (concentrated aqueous heparin), free from foreign substances or the vasoconstrictor agents and watery in appearance and viscosity, was administered intramuscularly for about a year. The medicament was injected by nurses into the gluteal muscles at eight to twelve hour intervals. Individual doses of heparin have varied from 60 to 180 mg., the smallest doses being given to patients weighing 90 pounds (40.8 Kg.) or less and the largest to those over 180 pounds (81.6 Kg.). One of the practical advantages of this method of heparin administration was the ease with which the anticoagulant effects could be controlled. One coagulation determination daily, immediately before the administration of a dose, was adequate. If the result of this test revealed a complete cessation of heparin effect, a somewhat larger dose than the previous one was given. If a satisfactory prolongation of

the coagulation time (eighteen to twenty-four minutes) was observed, the dosage was not changed. If the coagulation time was found to be over twenty-four minutes, either a smaller dose was ordered or the injection was postponed for two hours. The use of the concentrated aqueous heparin is a new, simple, safe and essentially painless form in which the drug can be administered intramuscularly in order to achieve a desired anticoagulant effect.

American J. Obstetrics and Gynecology, St. Louis

54:179-362 (Aug.) 1947. **Partial Index**

Advances in Practical Prevention of Gynecologic Cancer. R. J. Crossen.—p. 179.
Study of Causes of Fetal and Neonatal Mortality on Obstetric Service of Bellevue Hospital. J. S. Labate.—p. 188.
Menstrual Toxin: II. Clinical Significance. G. V. S. Smith.—p. 212.
Lymphopathia Venereum Complicating Labor: Analysis of 38 Cases. I. H. Kaiser and E. L. King.—p. 219.
Lymphogranuloma Venereum in Obstetrics. C. M. Steer.—p. 230.
*Does Rh Isoimmunization Cause Early Abortion? E. W. Overstreet, H. F. Traut, Marjorie Hunt and S. P. Lucia.—p. 235.
Studies in Uterotubal Insufflation. H. F. Newman.—p. 242.
Abortions: Study with Emphasis on Treatment. P. Peterson.—p. 251.
Plasma Vitamin A Levels in Pregnancy: Relationship to Total Plasma Lipids. D. Cayer, V. Crescenzo and Sophia Cody.—p. 259.
Classification of Ovarian Tumors Based on Histogenesis. J. A. Spencer and P. J. Reel.—p. 273.
Granulosa Cell Tumor, with Presentation of 5 Cases, 1 with Associated Seven Months' Pregnancy. J. A. Spencer and Z. J. R. Hollenbeck.—p. 281.
Meprane: Effective Estrogen for Inhibition and Suppression of Lactation. D. Coulton.—p. 289.
Clinical Study of New Synthetic Estrogen. Hazel A. C. Lin.—p. 296.
Psychiatric Aspects of Menopause. H. E. Chamberlain.—p. 301.
Cesarean Section Mortality in Hospitals of Small Community—Defense of Procedure. R. A. Gandy.—p. 307.
Management of Postabortal Peritonitis. H. C. Falk and G. Blinick.—p. 314.
Indications for Removal of Normal Uterus. R. E. Bieren and J. M. Hundley Jr.—p. 321.
*Further Studies in Early Puerperal Rising. G. Rosenblum and E. Melinkoff.—p. 325.

Rh Isoimmunization.—Overstreet and his co-workers analyzed 1,038 pregnancies of 512 Rh negative mothers as compared with 1,129 pregnancies of 534 Rh positive mothers. The abortion rates for all pregnancies of Rh negative mothers, for primigravid or multigravid pregnancies of Rh negative mothers and for pregnancies of Rh negative mothers who had borne at least one child manifesting hemolytic disease of the newborn were not higher than for the corresponding pregnancies of Rh positive mothers. The salvage of viable infants from the pregnancies of Rh negative mothers was equal or slightly greater than that from the corresponding pregnancies of Rh positive mothers. Thus, no statistical evidence could be advanced for the assumption that Rh immunization is an etiologic factor in early abortion. It may well be that the first two to four weeks of pregnancy are incapable of producing any isoimmunization. Several weeks beyond a period of ten weeks might be required to produce damage extensive enough to result in expulsion of the fetus. The summation, therefore, of the time factors alone would be in the neighborhood of twenty weeks, the onset of the period of viability. One case of repeated maternal sensitization sufficient to produce premature delivery and stillbirth due to erythroblastosis in a woman aged 41 is reported. There were 5 pregnancies with no living child, but no fetus had been spontaneously aborted. The maternal blood showed a 1 plus anti-Rh titer even before the onset of pregnancy and a 4 plus titer early in its course, yet the pregnancy is now in its thirty-second week and the patient has at no time presented any symptoms of threatening abortion.

Early Puerperal Rising.—Rosenblum and Melinkoff report a series of 601 delivered women of whom 490 (81 per cent) were made ambulatory on the first or second postpartum day. Together with a previously reported series of 582 patients, of whom 247 were early risers, this comprises 1,183 patients studied, of whom 737 got up early in the puerperium. Bowel function improved as a result of early puerperal rising. There was a decided reduction in the amount of nursing care required. The majority of patients subjected to early rising reported favorably on the method. The patient who got up on the third or fourth postpartum day showed no advantages over those patients who got up on the first or second postpartum day. The authors' opinion that early rising results in more rapid and more comfortable convalescence with less asthenia and less postoperative and postpartum depression has been further substantiated.

American Practitioner, Philadelphia

1:631-694 (Aug.) 1947

Migraine, 1947: Review. T. J. C. von Storch.—p. 631.
Interpretation of Ophthalmoscopic Findings in Arterial Hypertension. J. N. Greear Jr.—p. 640.
Simplification of Penicillin Aerosol Therapy for Home Treatment. W. Finke.—p. 643.
Protean Manifestations of Acute Rheumatic Fever. N. E. Reich.—p. 645.
Phlebothrombosis: Operative and Nonoperative Treatment. L. Kaplan.—p. 663.
Synopsis of Present Concepts in Endocrinology. R. A. Shipley.—p. 666.
Conduction Anesthesia for Focal Neuralgias in Rhinologic Practice. A. P. Seltzer.—p. 671.
Pathologic Physiology of Portal Cirrhosis. C. Moses.—p. 675.
Current Status of Penicillin in Ocular Infections. R. G. Ingalls.—p. 680.

Annals of Surgery, Philadelphia

126:125-252 (Aug.) 1947

Management of Carcinoma in Several Parts of the Colon. W. F. MacFee.—p. 125.
*Carcinoma of Thyroid. R. C. Horn Jr., R. F. Welty, F. P. Brooks, J. E. Rhoads and E. P. Pendergrass.—p. 140.
Primary Carcinoma of Lung, with Invasion of Ribs: Pneumonectomy and Simultaneous Block Resection of Chest Wall. F. P. Coleman.—p. 156.
Use of Mixture of Pure Amino Acids in Surgical Nutrition. I. Certain Pharmacologic Considerations. S. C. Werner.—p. 169.
Clinical Behavior of Arteriosclerotic Aneurysm of Abdominal Aorta: Rational Surgical Therapy. A. H. Blakemore.—p. 195.
*Intravenous Oxygen and Pulmonary Embolism. J. H. Sanders and I. M. Isoe.—p. 208.
Laryngo-Esophagectomy. R. R. Braund.—p. 215.
Leiomyoma of Kidney. I. C. Zuckerman, D. Kershner, B. D. Laytner and D. Hirschl.—p. 220.
*Congenital Absence of Gallbladder: Report of Three Cases. E. O. Latimer, F. L. Mendez Jr. and W. J. Hage.—p. 229.

Carcinoma of Thyroid.—Horn and his co-workers report 71 cases of carcinoma of the thyroid in 54 women and 17 men between the ages of 19 and 70 and 3 cases of lateral thyroid carcinoma in men between the ages of 19 and 39 who were treated at the Hospital of the University of Pennsylvania during the period July 1933 to December 1944. Sixty-two thyroid cancers were observed among a series of 2,079 surgically treated thyroid lesions, an incidence of 3 per cent. This is an incidence of 5.4 per cent of carcinoma in 1,135 surgically treated nodular goiters. The thyroid carcinomas occurring in the younger age groups tend to be of the less malignant pathologic types and to be less advanced in their growth when they first come under observation. A majority of thyroid carcinomas were of the papillary or malignant adenoma types, which may be grouped together as grade 1 tumors, or tumors of low or potential malignancy. Fourteen of 24 patients treated for tumors of these types more than five years ago and 6 of 10 patients treated more than ten years ago are alive and well. Although the prognosis in tumors of other pathologic types is poorer, the ten year survivals in this series include 1 patient with a small cell carcinoma and 1 with a giant cell carcinoma. Twelve of 14 patients whose tumors were discovered only on pathologic examination and who were treated more than five years ago are alive and well. Six of 8 patients treated more than ten years ago are alive and well. In many patients with thyroid cancer metastases developed or there were recurrences five years or more after the initial treatment; 1 patient died with metastases more than ten years after thyroidectomy. Surgical excision of all nodular goiters is recommended unless strong contraindications exist. If carcinoma is present and extends through the capsule of the gland, postoperative radiation should be instituted. It has been especially effective in the papillary carcinomas.

Intravenous Oxygen and Pulmonary Embolism.—Sanders and Isoe administered intravenous oxygen to 4 postoperative patients, all of whom were considered stable from a cardiorespiratory point of view; in addition it was administered to 2 postoperative patients in shock. An in vitro experiment was performed, in which oxygen was passed through 50 cc. of venous blood at various rates comparable to intravenous administration, to note any changes in oxygen saturation of the blood. No definite clinical changes were observed in the first patient

who was in shock. There was possible clinical improvement that could be attributed to the oxygen in the second patient in shock. There was no clinical evidence of pulmonary embolism or of systemic hypoxia. In the other 4 patients there was a definite and consistent decrease in the oxygen saturation of the arterial blood. This decrease was evidenced by actual arterial oxygen saturation determinations, symptoms of systemic hypoxia and by electrocardiographic changes. Three of the last 4 patients gave clinical evidence of pulmonary embolism. The in vitro experiment failed to show any appreciable absorption of the gas by blood. It is suggested that some of the ill effects of pulmonary embolism, and thereby arterial hypoxia, may be alleviated by the administration of atropine and papaverine before intravenous oxygen is given. Likewise, a state of shock or of anesthesia may diminish these reflexes and thereby permit the oxygen to be given. In its present status the value of intravenous oxygen as a therapeutic measure is doubtful; it is definitely hazardous because of pulmonary embolism.

Congenital Absence of Gallbladder.—Latimer and his co-workers report 3 cases of congenital absence of the gallbladder in women between the ages of 52 and 62. Surgical intervention failed to reveal the gallbladder in or about its normal location; the absence of an intrahepatic gallbladder was proved by retrograde cholangiography in 1 of these patients. A total of 71 cases of congenital absence of the gallbladder were analyzed from the literature; 34 were reported from surgical procedures, while 38 were postmortem reports, 1 case appearing in both series. A preoperative diagnosis of congenital absence of the gallbladder is extremely difficult because there is no group of symptoms or signs which are of value in making such a diagnosis. Roentgenographic visualization of the biliary tract is the most accurate diagnostic method known at present. When this method fails to produce any shadow congenital absence of the gallbladder is so rare that it is not suspected, there being no reported cases of the diagnosis made before operation or postmortem examination.

Archives of Internal Medicine, Chicago

80:1-146 (July) 1947

*Antecedent Jaundice in Cirrhosis of the Liver. R. Howard and C. J. Watson.—p. 1.
*Antithyroid Drugs: III. Comparison of Results of Newer Forms of Treatment of Thyrotoxicosis. R. H. Williams.—p. 11.
Thiouracils and Thioureas: Comparisons of Absorption, Distribution, Destruction and Excretion. R. H. Williams and Gloria A. Kay.—p. 37.
Streptobacillus Moniliformis Bacteremia with Minor Clinical Manifestations. B. Levine and W. H. Civin.—p. 53.
Effect of Irradiation, Immunity and Other Factors on Vaccinial Infection: Review Illustrated by Report of Secondary Ocular Infection Treated with Roentgen Rays. H. W. Pittman, L. B. Holt and G. T. Harrell.—p. 61.
Effect of Amino Acids on Function of the Muscles of Patients with Myasthenia Gravis. Clara Torda and H. G. Wolff.—p. 68.
Increased Catabolism Following Acute Myocardial Infarction. M. D. Altschule and F. M. Rosenfeld.—p. 74.
Basal Metabolic Rate in Hypertensive Vascular Disease. J. A. Rosenkrantz and C. Marshall.—p. 81.
Gastroenterology: Review of Literature from July 1945 to July 1946. W. L. Palmer, J. B. Kirsner, W. E. Ricketts and others.—p. 89.

Antecedent Jaundice in Hepatic Cirrhosis.—A history of a previous episode of infectious hepatitis was obtained in a significantly greater proportion of patients at the University of Minnesota Hospital with cirrhosis than in a similar group without hepatic disease. This lends support to the concept that in certain cases the hepatitis runs a chronic course, ultimately leading to cirrhosis of the liver. No attempt has been made to determine the proportion of cases of infectious hepatitis in which cirrhosis ultimately develops, but this percentage is probably small. On the other hand, when cases of cirrhosis are considered, hepatitis is believed to be a precursor in a significant number. The authors emphasize the importance of taking into account the type of material on which conclusions are based. In the present cases of cirrhosis, which were mostly drawn from rural communities, the incidence of alcoholism was relatively low, while that of antecedent hepatitis was relatively high.

Antithyroid Drugs.—Williams reports on 112 thyrotoxic patients who were given 222 courses of therapy with some of the newer antithyroid drugs. Many of these patients were treated with several compounds, and comparisons were made of the effectiveness of the drugs in the same and in different patients. The strongest antithyroid action was shown by 6-propylthiouracil and 6-cyclopropylthiouracil. The other drugs in order of decreasing potency were: 6-isobutylthiouracil, 6-butylthiouracil, 6-methylthiouracil, orthophenylenethiourea, thiothymine and aminothiazole. Thiouracil could be placed immediately after 6-methylthiouracil and tetramethylthiourea after ortho-phenylenethiourea in the order of potency. The order of desirability of the drugs is somewhat the same as their order of potency, with the exception of ortho-phenylenethiourea, which caused toxic reactions more frequently than did the other drugs. The use of aminothiazole caused severe arthritis, dermatitis and fever in 1 patient. In 43 patients treated with 6-isobutylthiouracil the only toxic reaction was slight itching in a few patients. Para-aminobenzoic acid was not notably active even when given in large doses. A rapid response was produced by 3,5-diiodo-para-aminobenzoic acid in a few patients. Thiourea derivatives can be used effectively in conjunction with radioactive treatment, or vice versa. It is sometimes of advantage to use all three forms of therapy.

Canadian Medical Association Journal, Montreal

57:95-186 (Aug.) 1947

Medical Research; Trends and Portents. H. V. Rice.—p. 95.
Histological Localization of Radioactive Elements: Review. J. Gross and C. P. Leblond.—p. 102.
Pneumoperitoneum in Treatment of Pulmonary Tuberculosis. M. Aronovitch, L. A. Caswell and J. A. Zadé.—p. 122.
Influenza in Northern Newfoundland. E. H. J. Smyth.—p. 127.
Use of Streptomycin in Non-Tuberculous Urinary Tract Infections: Preliminary Report. J. T. MacLean and F. Smith.—p. 131.
Pyribenzamine (N-Pyridyl, N-Benzyl, Dimethyl-Ethylenediamine-hydrochloride) in Treatment of Allergy. A. T. Henderson and B. Rose.—p. 136.
Resuscitation of Newborn. R. M. Stringer.—p. 140.
Working Concept of Psychoneuroses. H. R. Brillinger.—p. 142.
Mortality in Benign Prostatic Obstruction. S. A. MacDonald.—p. 148.
Battle Exhaustion: Follow-Up Study. R. M. Billings, F. C. R. Chalke and L. Shortt.—p. 152.
Primary Postoperative Hemorrhage in Tonsillectomy. F. A. Macneil.—p. 155.
Extrinsic Factors in Evaluation of B. C. G. A. Ascoli.—p. 157.
Future of Canadian Psychiatry. C. M. Hincks.—p. 161.

57:187-314 (Sept.) 1947

Pathologic Anatomy and Lethal Factors in Acute Fatal Cranio-Cerebral Injury. D. Magner.—p. 215.
Evaluation of Various Forms of Therapy in Early Syphilis. F. Kalz and B. Dean.—p. 221.
Idiopathic Hypoplastic Anemia with Bone Marrow Hyperplasia. E. S. Mills.—p. 227.
Hyperparathyroidism. G. H. Stobie.—p. 233.
Congenital Esophageal Atresia (Anatomical and Embryological Aspects). R. L. deC. H. Saunders and H. S. Wright.—p. 237.
Primary Carcinoma of the Ureter. F. Pilcher.—p. 240.
Aortic Aneurysms. J. E. Hill.—p. 244.
Effect of Atabrine on Auricular Fibrillation in Man. M. M. Gertler and S. B. Yohalem.—p. 249.
Analysis of 115 Cases of Pertussis Treated with Pertussis Antitoxin. E. M. Worden.—p. 253.
Early Ambulation in Practice of Obstetrics. E. C. Bryant.—p. 257.
*Isolation of Herpes Simplex Virus from Case of Polioencephalitis. J. W. Fisher and J. W. Patrick.—p. 260.
Urinary Tract Calculi. H. Ostry.—p. 266.
Phrenic Nerve Interruption: Technic and Indications. G. A. P. Hurley.—p. 271.
Protruded Intervertebral Disc. H. H. Hepburn.—p. 273.
Radical Perineal Prostatectomy for Carcinoma of the Prostate. C. A. Cawker.—p. 276.
Emotions and Human Relations. H. O. Foucar.—p. 281.

Herpes Simplex Virus in Polioencephalitis.—Fisher and Patrick report the case of a man aged 25, admitted to a Veterans Hospital in Montreal, during the summer of 1946 when poliomyelitis was epidemic in Canada. The differential diagnosis of his illness was either polioencephalitis, acute tuberculous meningitis or an abscess of the brain. Clinical herpetic infections in mice and rabbits were produced by intracranial injections of low concentrations of his spinal fluid. Interference effect was encountered when attempts were made to adapt the virus in the spinal fluid to these animals at high concentrations. In the latter instance, only subclinical infections occurred in the three species of animals used, as evidenced by their subsequent high degree of immunity on challenge and the rises in temperature of the guinea pigs and rabbits. There are only a few references in the literature which offer evidence that herpes

simplex virus may be the cause of human acute encephalitis. Herpes simplex virus may be present in the oral secretions of apparently normal persons, and the etiologic significance of the herpes (simplex) virus, when found in the brain or spinal fluid, has been questioned because of its occasional demonstration in the spinal fluid of persons showing no evidence of encephalitis or herpetic eruptions. It cannot be said definitely that in this patient the virus was the cause of the illness, since a further increase in the already high level of circulating neutralizing antibodies was not demonstrated. The man might have been infected earlier and at the time the spinal fluids were obtained a dominant neurotropic strain of herpes simplex virus could already have been present in them, because it was this strain that most readily could be adapted to animals by the intracranial route with subsequent manifestations of a central nervous system infection. Whether this virus was activated by some other stimuli to produce the encephalitis is difficult to say. This illness occurred at a time when poliomyelitis was epidemic. There was little doubt in the clinician's mind as to the case being one of polioencephalitis.

Journal of Infectious Diseases, Chicago

81:1-95 (July-Aug.) 1947. **Partial Index**

Chesson Strain of Plasmodium Vivax Malaria: IV. Immunity. C. M. Whorton, T. N. Pullman, W. R. Kirschbaum and others.—p. 1.
Pre-Erythrocytic Development of Plasmodium Lophurae in Various Hosts. C. G. Huff, F. Coulston, R. L. Laird and R. J. Porter.—p. 7.
Mechanism of Drug Resistance in Trypanosomes: I. Method for Differentiating Strains of Resistant Trypanosomes. F. W. Schueler, G. Chen and E. M. K. Geiling.—p. 14.
Serologic Classification of Arizona Group of Paracolon Bacteria. P. R. Edwards, Mary G. West and D. W. Bruner.—p. 19.
Studies on Leptospira Icterohaemorrhagiae. Shih Lu Chang.—p. 28.
Studies on Equine Encephalomyelitis in Michigan. G. C. Brown. —p. 48.
Studies on Relation of Wild Rats to Poliomyelitis. G. C. Brown and T. Francis Jr.—p. 55.
Field Studies in Bacillary Dysentery in U. S. Military Personnel and Civilians in North Africa and Italy. A. H. Stock, I. Eisenstadt, G. W. Triplett Jr. and A. Catto.—p. 59.
Observations on Susceptibility of Sooty Mangabeys (Cercocebus Fuliginosus) and a Baboon (Papio Papio) to Poliomyelitis. F. M. Schabel Jr. and F. B. Gordon.—p. 76.
Analysis of Saurian Malarial Infections as Influenced by Temperature. P. E. Thompson and C. V. Winder.—p. 84.

Journal of Investigative Dermatology, Baltimore

8:275-432 (June) 1947

Sensitivity to Iodides and Bromides in Dermatoses Other Then Dermatitis Herpetiformis. D. N. Alcon.—p. 287.
Dermatophytosis at an Infantry Post: Incidence and Characteristics of Infections by Three Species of Fungi. J. G. Hopkins, A. B. Hillegas, R. B. Ledin, G. C. Rebell and E. Camp.—p. 291.
Multiple Idiopathic Hemorrhagic Sarcoma of Kaposi: Histopathologic Study. W. Sachs, R. D. Azulay and J. Convit.—p. 317.
*Contact Dermatitis Due to Oil of Citronella: Report of 3 Cases with Experimental Studies on Ingredients and Related Substances. H. Keil. —p. 327.
Effect of Pyribenzamine on Tuberculin Reaction in Man. W. B. Guy. —p. 335.
Significance of Eosinophilia in Blister Fluids and Peripheral Blood in Pemphigus Vulgaris. A. W. Grace.—p. 339.
Studies on Eczematous Sensitization: I. Route by Which Sensitization Generalizes. A. Rostenberg Jr.—p. 345.
Action of Clavacin on Some Dermatophytes: Final Report. K. Loewenthal and J. A. Tolmach.—p. 357.
Skin Sensitization to Vesicant Agents of Chemical Warfare. M. B. Sulzberger, R. L. Baer, A. Kanof and Clare Lowenberg.—p. 365.
Experimental Aspects of Penicillin Sensitization: II. Reference to Schultz-Dale Phenomenon. F. E. Cormia, G. M. Lewis and Mary E. Hopper. —p. 395.
Group Sensitivity to Local Anesthetics: Confirmation of Possibility of Occurrence and Demonstration that it Does not Necessarily Always Take Place. M. J. Strauss.—p. 403.
Etiologic Role of Iodized Table Salt in Iododerma: Study Based on Further Experience of Fourteen Years. P. E. Bechet.—p. 409.
*Allergic Eczematous Dermatitis Due to Dyes in Nylon Stockings: Cross-Sensitization to Paraphenylendiamine (Preliminary Report). S. Dobkevitch and R. L. Baer.—p. 419.
Fluorescein Pattern of Dermatoses. F. Herrmann and N. B. Kanof. —p. 421.

Contact Dermatitis Due to Oil of Citronella.—Keil reports 3 cases of eczematous contact type hypersensitiveness to oil of citronella. The first patient had smeared some oil of citronella over his windows as a protection against mosquitoes. He recalled that the eruption had started the day after he used the oil. In the second patient itching developed at the site of application of "javanella" (an oil used to give laundry soap a pleasant odor). He recalled having knocked over a can of "javanella," at which time the oil had smeared his hands. There was a flare-up of his rash when he handled the oil. The third patient had used oil of citronella as a spray and also had rubbed it over various parts of the body as a protection against mosquitoes. Patch test studies indicated that the essential allergen in oil of citronella seems to be citronellal. Dermatitis due to oil of citronella is probably commoner than has been suspected. As the cases are observed chiefly during the summer, they are apt to be attributed to poison ivy or other plants.

Allergic Eczematous Dermatitis Due to Dyes in Nylon Stockings.—Patch tests were carried out by Dobkevitch and Baer in a group of 10 subjects who had stocking dermatitis with nylon stockings made by various manufacturers and with materials used in the manufacture of these stockings. The results of the tests showed that stocking dermatitis was caused by certain yellow and red dyes and not by the nylon fiber, the "finishes," "softeners" and certain other dyes used in the manufacture of the stockings. Inquiries indicate that these yellow and red dyes are azo dyes. Sensitization to these dyes was associated in all cases of stocking dermatitis with cross sensitization to paraphenylenediamine, probably on the basis of group hypersensitivity to compounds of quinone structure.

Military Surgeon, Washington, D. C.

101:99-190 (Aug.) 1947. **Partial Index**

Air Evacuation of Ground Force Troops. M. W. White.—p. 99.
Changes Due to Combat Experience in the E.T.O. on Erection and Ground Plan of an Evacuation Hospital. H. S. Reid.—p. 109.
Open Reduction for Mandibular and Superior Maxillary Fractures. J. C. Hampson. —p. 119.
Control of Vincent's Infection. M. J. Terzis.—p. 123.
Whirlpool Baths in a General Hospital. L. N. Rudin.—p. 125.
Report of 2 Cases of Complete Transposition of the Viscera. J. R. Derow and A. L. Stearns.—p. 139.

New England Journal of Medicine, Boston

237:207-242 (Aug. 14) 1947

Observations on Transurethral Prostatic Resection. R. M. Nesbit. —p. 207.
Examination of Serous Fluids by Cell-Block Technic. C. B. Chapman and E. J. Whalen.—p. 215.
Occurrence of Carcinoma of Thyroid Gland in Autopsy Material. W. P. Vander Laan.—p. 221.
Current Concepts of Jaundice, with Particular Reference to Hepatitis. L. E. Young.—p. 225.
Acute Cirrhosis of Liver, Alcoholic Type.—p. 231.
Retroperitoneal Neurofibrosarcoma.—p. 234.

237:243-294 (Aug. 21) 1947

Specific Reading Disability: Familial Syndrome Associated with Ambidexterity and Speech Defects and a Frequent Cause of Problem Behavior. R. S. Eustis.—p. 243.
Gynecology in the Community. L. C. Scheffey.—p. 250.
Q Fever: Report of a Case. M. Finland and M. F. Lesses.—p. 255.
Spinal Anesthesia for Pelvic Delivery. P. S. Marcus, J. W. Tunnell and L. H. Wilkinson.—p. 258.
Current Concepts of Jaundice, with Particular Reference to Hepatitis (Concluded). L. E. Young.—p. 261.
Carcinoma of Gall Bladder, with Perforation.—p. 284.
Organizing Pneumonia, Chronic Pneumonitis, Acute Glomerulonephritis.—p. 287.

237:295-348 (Aug. 28) 1947

Traumatic Arterial Vasospasm. P. S. Foisie.—p. 295.
*Vaginal Smears as Aid in Diagnosis of Early Carcinoma of Cervix. M. Fremont-Smith, Ruth M. Graham and J. V. Meigs.—p. 302.
Outbreak of Smallpox in American Military Personnel in Japan. H. A. Agerty.—p. 305.
*Hemoglobinemia Accompanying Transurethral Resection of Prostate. E. K. Landsteiner and C. A. Finch.—p. 310.
Industrial Medicine. I. R. Tabershaw.—p. 313.
Multiple Benign Peptic Ulcers of Stomach.—p. 339.
Cirrhosis of Liver, Alcoholic Type. Chronic, Active, Duodenal Ulcer with Erosion into Pancreaticoduodenal Artery.—p. 341.

Vaginal Smears in Diagnosis of Early Carcinoma of Cervix.—Fremont-Smith, Graham and Meigs consider it possible that the entire concept of the life history of cervical cancer needs revision: that the so-called "early case" with a short history of bleeding or a minimal visible lesion is already moderately advanced or advanced cancer. It is possible that early cancer causes no symptoms and that diagnosis in the incipient

stage would be followed in most cases by cure. Diagnosis of preinvasive carcinoma of the cervix is possible by study of the vaginal smear by Papanicolaou's method. The authors present brief case reports of 12 cases of early cervical carcinoma in 10 of which the vaginal smears were positive for tumor cells. Two of these patients had had no symptoms referable to the lesion. In 9 cases in which biopsy was performed, a diagnosis of cancer on the initial specimen was made in only 3. This proves that for early diagnosis the study of the vaginal smear is superior to biopsy.

Hemoglobinemia Following Resection of Prostate.—Landsteiner and Finch describe a fatal case of renal failure following transurethral prostatectomy. Death was caused by massive intravascular hemolysis occurring during the operation. Fifteen patients undergoing transurethral prostatectomy were studied for the presence of hemolysis by measurement of the serum hemochromogen level immediately at the termination of operation. In 10 cases a significant amount of hemolysis could be demonstrated; there were extremely high hemochromogen levels in 3 cases, resulting in temporary oliguria in 1 patient. Evidence is presented that this hemolysis is caused by the entrance of distilled water into the blood stream through venous channels opened during operation.

Oklahoma State Medical Assn. Jour., Oklahoma City

40:325-362 (Aug.) 1947

Acne Vulgaris in Adolescence. O. G. Hazel.—p. 327.
Electrolytes in Treatment. W. F. Sethney.—p. 330.
Cataracts. C. H. Haralson.—p. 332.
Common Fungous Infections. A. B. Abshier.—p. 334.
*Use of Curare in Electric Shock Therapy. T. R. Turner.—p. 338.

Curare in Electric Shock Therapy.—Three hundred and fifty electric shock treatments modified by curare were given by Turner to 55 patients in a general hospital without significant complications. By use of this drug not only is the frequency of injury reduced, but patients who might otherwise be denied convulsive therapy can be treated. The drug is an adjunct to such therapy, and, while its use is not without risk, it can be safely given if the physician has respect for its potency and observes the proper precautions in its administration.

Pennsylvania Medical Journal, Harrisburg

50:1129-1288 (Aug.) 1947

Intensive Treatment of Early Syphilis: Evaluation of Penicillin Therapy Combined with Arsenical and Heavy Metal. B. A. Goldmann, T. W. Baer and S. R. Bergad.—p. 1149.
Exophthalmos of Hyperthyroidism. C. E. G. Shannon.—p. 1155.
Hemoperitoneum from Rupture of Corpus Luteum: Case Report of Ruptured Corpus Luteum of Pregnancy. Joanna Pecman.—p. 1161.
Injury to Intervertebral Disk with Sciatic Neuralgia and Backache. R. Jaeger.—p. 1164.
Surgical Treatment of Ulcerative Colitis. L. Kraeer Ferguson and W. H. Erb.—p. 1170.

Public Health Reports, Washington, D. C.

62:1151-1182 (Aug. 8) 1947

Mental Hygiene in Public Health. P. V. Lemkau.—p. 1151.
Preliminary Report on Organic Materials as Tick Repellents and Toxic Agents. J. M. Brennan.—p. 1162.
Vertebral Body Trephine: Preliminary Report. A. A. Michele and F. J. Krueger.—p. 1166.
Plague: Survival of Infection in Fleas or Hibernating Ground Squirrels. F. M. Prince.—p. 1167.

62:1183-1214 (Aug. 15) 1947

State Planning for Participation in National Mental Health Act. R. H. Felix.—p. 1183.
DDT in Oil as Mosquito Larvicide. H. A. Johnson and W. L. Goodman.—p. 1191.
*Loss of Virulence of Treponema Pallidum During Processing of Dried Blood Serum. T. F. Probey.—p. 1199.

Loss of Virulence of Treponema Pallidum During Processing of Blood.—Probey found that Treponema pallidum suspended in a sodium chloride-blood serum solution becomes avirulent and is apparently killed during the deep-freezing and drying process. In rabbits inoculated with restored dried material there failed to develop evidence of syphilitic infection during approximately one hundred and forty days' observation. Three successive subtransfers, observed for thirteen, seven and nine months, also remained negative. The danger of transfusion syphilis appears to be eliminated with the use of processed (frozen and dried) human plasma or serum containing not more than 1 per cent of moisture.

62:1215-1246 (Aug. 22) 1947

*Control of Rabies: Report by Committee on Public Health Relations of the New York Academy of Medicine.—p. 1215.

62:1247-1282 (Aug. 29) 1947

Family and Dental Disease. V. Caries Experience Among Parents and Offspring Exposed to Drinking Water Containing Fluoride. H. Klein.—p. 1247.
Effects of DDT Mosquito Larviciding on Wildlife. II. Effects of Routine Airplane Larviciding on Bird and Mammal Populations. A. B. Erickson.—p. 1254.
Effects of DDT Mosquito Larviciding on Wildlife. III. Effects on Plankton Population of Routine Larviciding with DDT. E. L. Bishop.—p. 1263.

Control of Rabies.—The recommendations for the control of rabies by the committee on public health relations of the New York Academy of Medicine include the following: The federal agencies concerned with rabies should draft a national plan for rabies eradication. Transportation of dogs and other susceptible animals from one state to another by common carriers should be regulated by the federal government in cooperation with the state agencies concerned. Permits for entry into a state should be contingent on vaccination. Health provisions governing the importation of all dogs and other susceptible animals from foreign countries should be promulgated. Rabies in any animal or human being should be made reportable. Every state should require annual licensing of dogs. The license fee should be large enough to provide for efficient administration of the law. Annual vaccination of dogs is recommended, particularly in urban areas. Control measures other than registration and vaccination should be emphasized. These include the establishment of quarantine over sufficiently large areas during outbreaks of rabies among dogs; proper disposition of rabid dogs and those suspected of being rabid; destruction or supervised detention for not less than three months of all dogs known to have been bitten by or exposed to rabid animals, and the impounding and disposal of all stray dogs. An educational program should be launched to explain the necessity for control measures and especially the efficacy of the vaccines.

Rhode Island Medical Journal, Providence

30:493-564 (July) 1947

Use of Estrogens and Progesterone. E. L. Sevringhaus.—p. 507.
Lobotomy. H. Hamlin.—p. 511.
Occupational Medicine and Its Relationship to Present Day Industrial Relations. C. F. Yeager.—p. 514.
Records and Neuropsychiatry. L. A. Senseman.—p. 517.

30:565-636 (Aug.) 1947

Anti-Biotic Agents In Clinical Medicine. C. Keefer.—p. 579.
Psychiatric Lessons Learned in the Army. M. J. Farrell.—p. 582.
Trends in Part-Time Industrial Health Service. C. Pharris.—p. 587.

Rocky Mountain Medical Journal, Denver

44:581-676 (Aug.) 1947

Pediatric Practice in a Small Community. D. C. Badger.—p. 601.
Infantile Paralysis in State of Utah in 1945. J. A. Anderson, E. B. Holley, W. Kitto and Patricia Thouin.—p. 602.
Mesantoin: New Anticonvulsant in Management of Epilepsy; Preliminary Report. H. R. Carter.—p. 614.
Acute Hematogenous Osteomyelitis. A. M. Okelberry.—p. 616.
Penicillin in Venereal Disease. Grace E. Field.—p. 619.
X-Ray Therapy in Treatment of Para-Arthritis of the Shoulder? Study Based on Treatment of 64 Cases. M. L. Allen.—p. 621.

44:677-772 (Sept.) 1947

Health Education: Introductory Symposium. L. W. Bortree and others.—p. 696.
Vagotomy in Treatment of Peptic Ulcer. K. B. Castleton.—p. 698.
Place of General Practitioner in American Medicine. L. J. Moorman.—p. 706.
Gap Bone Grafts. E. Parnall.—p. 711.
Chronic Osteomyelitis. R. S. Clegg.—p. 713.
Cancer Case Reporting and Central Register System in Colorado. R. L. Cleere.—p. 714.

United States Naval Med. Bulletin, Washington, D. C.

47:579-776 (July-Aug.) 1947

Report on Primary Bone Grafts. H. C. Fett and J. M. Smith.—p. 579.
Japanese "B" Encephalitis: Epidemiologic Report of 1945 Outbreak on Okinawa. W. E. Mosher Jr.—p. 586.
Medical Survey of Allied Repatriates After Liberation from Japanese Prisons. J. E. Moss.—p. 598.
Determination and Treatment of Penicillin-Resistant Gonorrheal Urethritis: Report on 24 Cases. W. W. Duemling and S. H. Horton Jr.—p. 605.
*Relationship Between Measles and Tuberculosis. M. P. Thomas and D. L. Knutson.—p. 616.
Consideration of Significance of Hallucinations. O. A. Will Jr.—p. 622.
Appendicitis in a United States Naval Hospital: Report of 2,404 Consecutive Cases with Emphasis on Fatal Cases. F. R. Robbins.—p. 634.
*Local Treatment of Furunculosis with Penicillin. J. H. Liles Jr.—p. 645.
The Eve Method of Resuscitation. L. D. Carson and J. C. Pinto. —p. 650.
Urologic and Ophthalmologic Observations in 2 Cases of Reiter's Syndrome. E. J. Olenick and J. W. Sargent.—p. 657.
The Rh Factor. W. Hunt.—p. 663.
Bankart Operation for Recurrent Dislocation of Shoulder. J. W. Metcalfe.—p. 67?.
Psychiatric Screening Tests at a Precommissioning Center. R. C. Moore. —p. 676.
Osteoplastic Repair of Defects of Tibia Following Osteomyelitis Due to Trauma. S. Sideman and W. A. Gunther.—p. 683.
Hemorrhagic Smallpox: Report of Case with Recovery; Treatment with Massive Doses of Penicillin. K. D. Weeks and W. S. McClelland. —p. 707.

Relationship Between Measles and Tuberculosis.—On the basis of a case history and of reports in the literature Thomas and Knutson stress the rapid onset of tuberculosis after measles. They emphasize the need for careful examination of patients with prolonged recuperative periods. Repeated roentgen studies with concurrent examinations of the sputum are indicated. Immune factors are altered during the acute infection of measles. The literature presents evidence that the incidence of tuberculosis is high immediately after measles.

Local Administration of Penicillin in Furunculosis.—Liles found that the average healing time in a series of 50 cases of furunculosis in which the furuncles were treated by local injection of penicillin solution was four days as compared to eleven days for the controls. The patients treated with penicillin had far less pain and no complications; scar formation was negligible and the lesions drained far less exudate. The majority of patients required only one injection. Incisions were not necessary in the cases in which treatment was with penicillin.

Virginia Medical Monthly, Richmond

74:339-390 (Aug.) 1947

Post War Medical Education. L. F. Smead.—p. 339.
Treatment of Burns. C. H. Lupton.—p. 342.
The Psychoneuroses: What the General Practitioner Should Know. A. M. Duval.—p. 351.
Penicillin in Syphilis. E. E. Barksdale.—p. 355.
Treatment of Spastic Colon. J. M. MacMillan.—p. 360.
Therapy of Obesity. J. P. Lynch.—p. 362.
Diagnosis and Treatment of Herniated Nucleus Pulposus. J. L. Thomson.—p. 365.
Masking of Syphilis by Penicillin: Report of a Case. J. M. Suter. —p. 369.
International Drama. J. B. Williams.—p. 371.
Signing of Death Certificates Under Virginia Law. H. S. Breyfogle. —p. 375.

74:391-442 (Sept.) 1947

Need for Trained Medical Anesthetists in Virginia. H. J. Warthen Jr. —p. 394.
Protruded Intervertebral Disks as Cause of Disabling Pain and Paralysis. J. G. Love.—p. 398.
Practice of Psychosomatic Medicine. J. F. Williams.—p. 401.
Unusual Tumors of Abdomen. R. Buxton.—p. 406.
Virus Pneumonia—Brief Review. F. T. Zinn.—p. 410.
Water Balance. R. W. Goens.—p. 413.
Complicated Surgery of Abdomen with Reference to Anesthesia, Drainage, Pre- and Post-operative Care: Case Reports. G. A. Wright.—p. 418.
Trendelenberg Posture in Third Stage of Labor. E. M. Rucker.—p. 423.

West Virginia Medical Journal, Charleston

43:293-322 (Sept.) 1947

Some Headaches Amenable to Surgery. L. Gage.—p. 293.
Diarrhea. J. W. Bruce.—p. 300.
Psychiatry and the General Practitioner. M. L. Gerstle Jr.—p. 303.
Abdominal Pregnancy. L. H. Douglass and S. G. Kohn.—p. 307.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

Brain, London

70:109-224 (June) 1947

Lengthening and Shortening Reactions and Their Occurrence in Man. G. G. J. Rademaker.—p. 109.
Organization of Motor Cortex of Monkey Based on Electromyographic Studies. J. F. Bosma and E. Gellhorn.—p. 127.
*Pathogenesis of Causalgia in Peripheral Nerve Injuries. P. W. Nathan. —p. 145.
Function of Circulus Arteriosus of Willis. L. Rogers.—p. 171.
Hippocampus and the Sense of Smell: Review. A. Brodal.—p. 179.

Pathogenesis of Causalgia in Peripheral Nerve Injuries.—Causalgia is easily recognized from the descriptions of the patients. Associated with it there may be anhydrosis or hyperhydrosis, dilatation of the capillaries and arterioles, cyanosis or redness of the skin, edema, osteoporosis, anesthesia or normal tactile sensibility, analgesia or hypoalgesia. These signs may occur with lesions of peripheral nerves without causalgia. The popular view that causalgia occurs only in partial lesions is due to the clinical impression caused by the actual preponderance of partial over complete lesions exhibiting causalgia. Evidence is brought to show that causalgia may occur in complete lesions of peripheral nerves. The pain impulses arise in the central end of the damaged nerve; they do not arise in the nerve endings of the region which is painful. Lewis's hypothesis of the genesis of causalgia does not accord with the facts. Nathan concludes that the most satisfactory hypothesis is as follows: stimulation of the somatic sensory axons occurs at the site of the lesion on the nerve trunk; this stimulation is caused by efferent impulses coming down the sympathetic outflow; the site of the lesion forms an artificial synapse, where this stimulation occurs; the pains due to impulses arising at this synapse are referred by the patient to the area of distribution of the sensory nerve.

British Journal of Experimental Pathology, London

28:161-236 (June) 1947

Action of Monoalkyl and Dialkyl Succinic Acids and Monoesters and Monoamido Derivatives of Alkyl Succinic Acids on Growth of Mycobacterium Tuberculosis. P. A. McNally.—p. 161.
Stabilization of Thrombin in Plasma: Development of Simple Two-Stage Method for Determination of Prothrombin. L. A. Sternberger. —p. 168.
Oedematiens Toxin Antitoxin Reaction: With Special Attention to Nature of Sera Employed. A. M. Brown.—p. 178.
Nature and Mode of Action of Intravenous Toxic Factors in Saline Extracts of Muscle and Other Tissues. H. N. Green and H. B. Stoner.—p. 189.
Studies on Staphylococcus Mutation: Characteristics of the "G" (Gonidial) Variant and Factors Concerned in Its Production. J. H. Hale. —p. 202.
Inhibition of Growth of Bact. Typhosum by Methyl Derivatives of Indole and Tryptophan. P. Fildes and H. N. Rydon.—p. 211.
Protective Antigens Isolated from Br. Abortus. J. S. Paterson, N. W. Pirie and A. W. Stableforth.—p. 223.

British Medical Journal, London

2:197-238 (Aug. 9) 1947

*Liver Function Tests in Diagnosis of Jaundice: Review of 200 Cases. N. F. Maclagan.—p. 197.
Relative Oral Toxicity of Some Therapeutic Iron Preparations. G. F. Somers.—p. 201.
Experiment in Rehabilitation. J. R. Napier, J. N. Barron, T. P. Gregory and D. R. Thompson.—p. 203.
Acquired Syphilis in Children. Marjorie Murrell and Mary S. Gray. —p. 206.
Factors Influencing Future Provision of Day Nurseries.—p. 207.
Possible Mode of Action of Penicillin. K. M. Pandalai and M. George. —p. 210.
Surgery in Two Wars. P. H. Mitchiner.—p. 219.
French Railway (Northern Region) X-Ray Train. P. LeGô.—p. 221.

Liver Function Tests in Diagnosis of Jaundice.—According to Maclagan the combination of the serum alkaline phosphatase, thymol turbidity, thymol flocculation and serum colloidal gold tests has proved of diagnostic value in 200 cases of jaundice. The combination of phosphatase with one flocculation test will distinguish obstructive from nonobstructive jaundice in from 65 to 79 per cent of cases. The thymol flocculation test is slightly the best of the three flocculation tests tried. Strongly positive flocculation reactions or phosphatase levels below 15 King-Armstrong units suggest nonobstructive jaun-

dice; negative or weakly positive flocculation reactions with phosphatase levels above 35 units suggest biliary obstruction, and phosphatase levels above 42 units are also in favor of obstruction. While no combination of tests will give a definite diagnostic answer in every case of jaundice the methods described here appear to be reliable in a high proportion of cases with a reasonably small expenditure of labor and materials.

2:239-282 (Aug. 16) 1947

Problem of Fertilization. Lord Rothschild.—p. 239.
Influence of Penicillin on Coagulation of Blood, with Especial Reference to Certain Dental Operations. A. Fleming and E. W. Fish.—p. 242.
*Irradiation of Gastric Cancer. G. C. Fairchild and A. Shorter.—p. 243.
Field Investigation of Outbreak of Diphtheria. J. W. Webb and N. Macfadyen.—p. 248.
Partial Hepatectomy and Right Hemicolectomy for Carcinoma of Hepatic Flexure. R. W. Raven.—p. 249.
Hernia of Diaphragm as Complication of Labor. B. C. Murless.—p. 251.
*New Treatment of Rheumatoid Arthritis. I. Barsi.—p. 252.

Irradiation of Gastric Cancer.—Fairchild and Shorter treated 15 patients with inoperable cancer of the stomach by direct radiation. In 7 patients the irradiation was purely palliative because of obvious spread beyond the possible field of radiation or poor general condition. In 8 patients the growth appeared to be limited to an area that could be irradiated. Of these, 1 lived twenty-four months after treatment, 2 fifteen months, 1 seven months, 1 four months and 1 three months. The remaining 2 died within the first week. Exploratory operation is the only reliable way of deciding the correct form of treatment. The exposure must be such as to enable the direct irradiation to be carried out in an anteroposterior plane. An attempt was made to give an adequate total dose of irradiation at one exposure with uniform distribution, entailing a surface dose of 1,300 r from a lower tube beneath the patient and 1,600 r direct to the lesion from a second tube above the patient. This latter dose is being gradually increased. There has been remarkably little reaction to irradiation even after the administration of 3,000 r in three minutes. Although the series is small the authors consider that direct radiation of high intensity of the tumor and its field of local spread exposed temporarily at operation will prove to be a rational and hopeful advance in the treatment of cancer of the stomach and other viscera. Whether the cancer is rendered inoperable by the poor general condition of the patient or by irremovable local spread, this method will often succeed where surgery alone must fail. Though wider exposure is needed than for surgical therapy alone, with adequate precautions the whole procedure should not be so shock-producing as is wide surgical excision.

Treatment of Rheumatoid Arthritis.—Barsi transfused the blood of pregnant women to 28 patients (men and women) with rheumatoid arthritis. In each case 300 cc. of citrated blood was given. This was repeated several times according to the symptoms of improvement. Eighteen patients recovered or improved, while 10 remained unchanged. The speed with which the improvement took place and the lasting effects of the improvements are emphasized. It is concluded that some cases of rheumatoid arthritis can be promptly and permanently cured by the unknown material circulating in the blood of pregnant women.

Lancet, London

2:159-194 (Aug. 2) 1947

*Penicillin in Prevention of Infection During Operations on Brain and Spinal Cord. J. B. Pennybacker, Margaret Taylor and H. Cairns.—p. 159.
*Cause of Postoperative Shock. A. R. Hunter.—p. 162.
*Haemophilus Influenzae Meningitis in Infants. B. Gottlieb and C. C. Forsyth.—p. 164.
Haemophilus Influenzae Meningitis with Recovery. J. Gerrard.—p. 167.
Granular Proctitis Treated with Succinyl-Sulfathiazole Suppositories. E. H. Cluer.—p. 168.
Pyrexia with Hypernephroma. C. H. Catlin, E. W. Bintcliffe and F. G. Marson.—p. 170.
Micro-Estimation of Non-Protein Nitrogen in Serum, Plasma or Blood. F. Rappaport and F. Eichhorn.—p. 171.
Treatment of Prostatic Cancer. M. Berger.—p. 172.

Penicillin to Prevent Infection of Brain and Spinal Cord During Operation.—Pennybacker and his co-workers report results of two years' trial with local applications of penicillin powder in neurosurgical interventions. They use a penicillin sulfamezathine mixture with 5,000 units of penicillin per gram. When the operative wound is ready to be closed and all bleeding has been stopped, the various layers of the wound are frosted with powder—the brain lightly, and the dura, pericranium and undersurface of the scalp flap more heavily. In laminectomy wounds the external surface of the dura, the muscles and the subcutaneous fat are liberally dusted. The total amount placed in a wound varied between 0.7 and 3 Gm. No ill effects were observed. Fluids in the wound usually contained more than 0.02 unit of penicillin per cubic centimeter up to eighteen hours after the powder had been applied. The penicillin was in greater concentration and persisted longer in wounds containing much scar tissue (from old missile wounds of the head) than in fresh wounds with normally vascularized surfaces. In 1,169 consecutive major cerebral and spinal operations before the use of local penicillin there were 51 cases of postoperative infection (4.4 per cent). In 670 consecutive major cerebral and spinal operations with local application of penicillin there were 6 cases of postoperative infection (0.9 per cent). The local application of penicillin-sulfamezathine powder is a useful additional method of preventing bacterial infection but does not obviate the need for continuous supervision and improvement of aseptic surgical technic.

Cause of Postoperative Shock.—According to Hunter there is a serious source of error in studies on experimental shock. It appears that organisms of the gas gangrene group are symbiotic and harmless in the living muscle of dogs and cats, but when this tissue dies they proliferate and liberate their exotoxins. Consequently the later stages of many of the experiments in which muscle masses were severely traumatized or isolated from their blood supply were studies of an overwhelming gas infection and not of shock. When such experiments were repeated in the presence of sufficient sulfonamide drug to prevent infection, many of the characteristic signs of shock did not develop. The author studied postoperative shock by withdrawing venous blood before, during and after operation. He studied blood changes associated with the onset of shock in man by determining the specific gravities of blood and plasma. He found that hemoconcentration plays no part in the development of shock during or after operation.

Penicillin and Sulfonamide Drugs in Hemophilus Influenzae Meningitis.—Gottlieb and Forsyth report 4 cases of meningitis in infants to emphasize that even in infections with strains of Hemophilus influenzae which are relatively insensitive to penicillin by in vitro tests recovery can be expected if massive doses of penicillin are given together with sulfonamide compounds. The data indicate that 1 million units or more of penicillin were given intrathecally and as high as 47 million units were given intramuscularly. In addition, sulfadiazine was given by mouth. A treatment found to be effective in infants is described. As soon as pyogenic meningitis was diagnosed, 30,000 units of pure crystalline penicillin was given intrathecally daily, and 60,000 units of penicillin was given intramuscularly every three hours. When the diagnosis of influenzal meningitis was confirmed and the organisms were found to be relatively insensitive, 50,000 units of pure crystalline penicillin was given daily intrathecally for at least seven days after the cerebrospinal fluid became sterile, 120,000 units being given at three hour intervals by the intramuscular route at the same time. Administration of intramuscular penicillin and oral sulfadiazine was continued for two weeks after the cerebrospinal fluid became sterile. It is suggested that before an organism is reported as insensitive to penicillin in vitro much higher concentrations than 10 units per cubic centimeter must be tried.

Practitioner, London

159:83-158 (Aug.) 1947

Use and Abuse of Rest. Lord Horder.—p. 83.
Postoperative Convalescence. H. Atkins.—p. 87.
Convalescence in Childhood. W. S. Craig.—p. 95.
Convalescence in Obstetrics. A. W. Purdie.—p. 101.
Climate and Convalescence. A. Abrahams.—p. 109.
Convalescent Homes. C. Morris and M. L. Ward.—p. 116.
Herpes Zoster. J. G. M. Hamilton.—p. 122.
Recognition of Neurotic Illness. H. G. Miller.—p. 128.

Acta Chirurgica Scandinavica, Stockholm

95:483-582 (June 25) 1947. **Partial Index**

*Anuria Observed in Connection with Penicillin Therapy. B. Nylén.—p. 483.
*Intratracheal Goiter. L. Thorén.—p. 495.
Synovectomy in Cases of Chondromalacia of Patella. C. Hirsch.—p. 513.
Clinical Study of Hematologic Changes in Acute Obstruction of Small Intestine. L. Efskind.—p. 519.
Local Penicillin Treatment of Suppurative Infection in Tendon Sheath. E. Unonius.—p. 532.
Two Cases of Incarceration in Defect of Mesentery of Small Intestine. E. E. Vuori.—p. 541.

Anuria in Penicillin Therapy.—Nylén describes the case of a man, aged 78, who in the course of an operation for strangulated inguinal hernia was given sulfathiazole. After ten days this drug had caused an exanthem, and sulfonamide crystals were found in the urine. The treatment with sulfathiazole was discontinued, and penicillin was given intramuscularly for five days. The excretion of urine decreased to complete anuria, but the patient improved and the urinary function was reestablished. The author made animal experiments which disclosed that penicillin did not inhibit diuresis. However, the penicillin used in the animals contained less impurities than that which had been administered to the patient. The author thinks that impairment of renal function should be watched for in the course of penicillin therapy.

Intratracheal Goiter.—Thorén presents the case of a woman, aged 30, who for years had difficulty in breathing. Pregnancy intensified this difficulty. On the basis of the history and laryngoscopic and roentgenoscopic examinations the condition was diagnosed as intratracheal goiter. The patient died during an attack of suffocation in spite of intubation and other resuscitative measures. At necropsy a direct connection between the intratracheal and extratracheal goiter via the membrane between the cricoid cartilage and the first tracheal cartilage ring could be verified. It may be assumed that the intratracheal goiter originated either through the ingrowth of strumal tissue or by an embryonal incomplete detachment of a part of the thyroid primordium. The author believes that suffocation may possibly have been due to a reactive swelling and hyperemia after treatment with vascular constrictive agents in connection with laryngoscopic study.

Boletín del Ateneo Médico de Lima, Lima

2:81-128 (May-June) 1947. **Partial Index**

Clinical Application of Spirography. F. Vargas Jiménez.—p. 90.
*Piedra. J. Manrique.—p. 123.

Piedra.—Piedra is a disease caused by fungi in which hard, minute nodules form on the shafts of hair, beard and mustache. The roots and follicles of hair are not affected. Four varieties of "white piedra" are described: the European (also called piedra nostras), the Japanese, the American light gray piedra and the American black piedra. The causal agents of white piedra are the fungi Trichosporon beigelii, Trichosporon granulosum, Trichosporon giganteum and Trichosporon ribeyroi for the European, Japanese, American and light gray varieties, and Ascomycetes piedra hortay for piedra negra. White European piedra occurs on the mustache and the beard or on the head of women. Japanese piedra occurs only on the mustache and on the beard. American piedra (also called Columbian piedra) occurs on the hair of women; light gray piedra at the end of the hair and piedra negra on the hair near the scalp. This variety has been found in Brazil and in some South American countries. Contagion is rare. The clinical diagnosis is easy. The causal fungus is identifiable when the infected hair is diluted in a 40 per cent solution of potassium hydrate and the solution observed under the microscope. Piedra must be differentiated from nits, trichomycosis palmellina and moniliform aplasia. Therapy consists of application of 1 or 2 per cent alcoholic solution of mercuric sublimate or a 5 per cent solution of salicylic acid and frequent combing with a fine comb. It is advisable to apply a solution of iodine on the growing hair near the scalp when parasitism is acute.

Bruxelles-Medical, Brussels

27:1753-1790 (Aug. 10) 1947

*Modifications of Hemopoiesis in Chronic Myeloid Leukemia Treated with Ethyl Carbamate. P. Dustin.—p. 1763.

Ethyl Carbamate in Treatment of Leukemia.—Dustin treated 4 men between the ages of 26 and 61 years and 4 women between the ages of 30 and 53 years for chronic myeloid leukemia with ethyl carbamate. Four grams were given by mouth daily before meals. The total dose varied from 82 to 196 Gm. Administration of the drug was continued until the number of leukocytes was near 10,000. Sternal puncture was performed before and after each treatment. The leukocyte count decreased, there was a rise in the hemoglobin content and in the number of red blood corpuscles. The general condition was considerably improved. The enlargement of the spleen became less pronounced. In spite of these favorable results sternal puncture revealed in 2 cases that there was little change in the ratio of granulopoiesis to erythropoiesis, and many immature granulocytes were observed in the peripheral blood. Recurrences were the rule. A malignant transformation in the course of the treatment was observed in 1 case, and acquired resistance to ethyl carbamate was apparent in another case. Ethyl carbamate deserves a clinical trial on a large scale under strict hematologic control. Its combined use with irradiation deserves further study.

Deutsche medizinische Wochenschrift, Stuttgart

72:337-368 (July 4) 1947. **Partial Index**

Urogenital Tuberculosis. T. Naegeli.—p. 337.
Clinical Aspects of Tularemia. H. W. Bansi.—p. 339.
Clinical Aspects and Surgical Therapy of Neurinomas of Acoustic Nerve. T. Riechert.—p. 343.
*Neuromuscular Problems in Tuberculous Cavities. A. Sturm.—p. 347.
*Investigations on Gonococci During Penicillin Therapy of Gonorrhea. H. Schuermann.—p. 353.
Meningitis in Infants. H. R. Wiedemann.—p. 357.

Neuromuscular Problems in Tuberculous Cavities.—Sturm points out that during involution of atelectatic pneumonias roentgenologic evidence of cavities may develop, but these pseudocavities are not related to the destruction of tissue. Their rapid involution suggests that they represent disturbances in the tonus of the pulmonary tissues. The author has observed in these areas of lesser density intercurrent bullous emphysemas. He has developed a concept of a diphasic nervous pulmonary reaction in the form of contraction and dilation of the pulmonary alveoli. He has demonstrated with the aid of roentgenograms how from the atelectatically contracted tissue there developed under change of the sympathetic pulmonary tonus by nervous paralysis or by active dilation of the alveolar musculature a condition of pulmonary inflation antagonistic to contraction. He cites observations to illustrate his explanation and discusses differences between elastic and rigid cavities or between tension and fusion cavities. Investigation of pressure conditions in cavities, which began with the introduction of Monaldi's suction drainage, corresponds better to the concepts suggested by Strum than to the concept of elastic distention cavity. The efficacy of phrenic exeresis and of artificial pneumothorax in the healing of cavities is explained better by reflex modification of the neuromuscular system of the lung than by the action of purely mechanical factors.

Gonococci During Penicillin Therapy of Gonorrhea.—Schuermann observed disappearance of gonococci from the microscopic specimens under the influence of penicillin therapy at the earliest after from two to two and a half hours, but most frequently after four and a half hours and occasionally after eleven and more hours. Culture tests usually disclosed bacteriostasis one hour earlier. Persistence of gonococci under penicillin therapy suggests that the treatment might fail. Changes in the form of the gonococci appeared in some patients from fifteen to twenty minutes after the initiation of penicillin therapy, and they were more frequent and more pronounced after thirty to forty-five minutes. The changes in form included swelling, formation of spheres, dumb-bells and the like. In some patients the gonococci exhibited no changes in form. Several hours after the elimination of penicillin degenerative appearances of gonococci were again replaced by normal ones. Relapses

after penicillin therapy were characterized by typical gonococci. Degenerative forms were not demonstrable. In the relapses that followed penicillin therapy, the culture method disclosed gonococci earlier than did the microscopic specimen. Gonococci remained gram negative under penicillin therapy, regardless of whether changes in form appeared.

Helvetica Chirurgica Acta, Basel

14:147-240 (July) 1947. **Partial Index**

Sequels of Pneumonotomy. M. Iselin.—p. 147.
Liquid Blood Inside Doubly Ligated Parts of Blood Vessels Due to Thrombolysis. M. Zehnder.—p. 162.
*Foreign Body Granulomatosis of Peritoneum Caused by Talcum Powder. C. Klemm.—p. 181.

Intraperitoneal Granulomatous Foreign Body Reaction.—Animal experiments carried out by Klemm demonstrated that the visceral as well as the parietal peritoneum of guinea pigs reacts to the hydrous magnesium silicate (talcum powder) with formation of foreign body granulations and with peritoneal adhesions. In 3 reported cases of abdominal foreign body granulations after laparotomies, the foreign bodies could be identified on mineralogic examination as crystals of magnesium silicate. In 2 of the 3 cases the lesions caused by the talcum powder were severe and threatened the life of the patients. Since intra-abdominal intervention occurred in all the cases twenty-three days to twenty years before the demonstration of the magnesium silicate crystals, it is suggested that the talcum powder had been deposited accidentally by the surgeon. The foreign body granulomas may not be recognized with certainty as such on macroscopic examination. They may simulate peritoneal tuberculosis or terminal ileitis. They may be overlooked because of their possible minuteness. The importance of the granulomatous lesions and adhesions appears to depend on the amount of talcum powder present. Experiments on guinea pigs with potassium bitartrate powder demonstrated that this powder does not produce adhesions or granulomatous lesions. Further clinical investigations are required to show whether this substance is suitable for replacing talcum powder as an aid in the use of sterile rubber gloves.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

91:2005-2084 (July 26) 1947. **Partial Index**

Abdominal and Thoracic Lesions Resulting from Explosions. C. C. van Rappard.—p. 2020.
*Experiences in Investigations Regarding the Rh Factor and Anti Rh Agglutinins. J. A. G. ten Berg, C. F. G. W. van den Hurk and W. Bocré.—p. 2026.
*Anesthesia of Brachial Plexus in Treatment of Embolism of Brachial Artery. A. G. Brandsma.—p. 2031.
"Minor Symptoms" in Pernicious Anemia or Pernicious Disease. F. Grewel.—p. 2035.
Treatment of Hypertension with Saltless Diet. H. J. Viersma.—p. 2042.

Rh Factor and Anti-Rh Agglutination.—Ten Berg and associates state that because the administration of Rh positive blood to Rh negative patients involves hazards, it has become necessary for blood transfusion services to have Rh negative donors available. At first test serums for the detection of the Rh factor were prepared with the aid of guinea pigs. Berg and his co-workers found a serum from an Rh negative mother with blood group AB, in whom the agglutination titer for Rh positive erythrocytes was 1:160. Comparative tests showed that results obtained with this serum compared favorably with those obtained with guinea pig test serum, so the human serum containing anti-Rh agglutinins was used to test 2,341 donors of the Rotterdam transfusion service. The authors describe a simple technic of agglutination and record the results obtained with it.

Anesthesia of Brachial Plexus in Embolism of Brachial Artery.—Brandsma relates the case of a woman, aged 47, with mitral stenosis, in whom an embolism developed in the right brachial artery. By anesthetizing the brachial plexus, dilatation of the brachial artery and its collaterals was effected and the circulation in the arm restored. It is assumed that the relatively small embolus had entered into the periphery.

Nordisk Medicin, Gothenburg

34:1373-1412 (June 20) 1947

Recent Aids for Diagnosis of Angina Pectoris. H. Rasmussen.—p. 1373.
Antistreptolysin Reaction: Material of 495 Cases. R. Amlie and P. Oeding.—p. 1379

Hospitalstidende

Sinusitis in Childhood. E. Rekling and B. Worning.—p. 1381.
*Sublimate Titration Instead of Takata Reaction. N. R. Christoffersen and H. Raagaard.—p. 1388.

Norsk Magasin for Lægevidenskapen

Carcinoma of Kidney. Discussion of Concept "True Hypernephroma." G. Thorsrud.—p. 1391.
Sulfathiazole Provoking Erythema Nodosum of Tuberculous Nature. A. Jervell.—p. 1393.
Case of Therapeutic Pneumoperitoneum. J. F. Bratt.—p. 1395.

Hygiea

*Pathogenesis and Prophylaxis in Infantile Paralysis. S. Gard.—p. 1399.

Sublimate Titration Instead of Takata Reaction.—In their comparative study of the Takata reaction and the sublimate titration test according to Stolte, in 287 serums from 79 patients with acute and chronic hepatitis and in 1 case of cholelithiasis Christoffersen and Raagaard found the sublimate tritration considerably superior to the Takata reaction, especially in prognosis. Because of its simplicity, speed and greater sensitivity, as well as the advantage of a definite numerical expression, the method should in their opinion replace the Takata reaction.

Pathogenesis and Prophylaxis in Infantile Paralysis.—According to Gard present evidence indicates that the poliomyelitis virus is strictly neurotropic, with intracellular development of the specific process. The infection follows the axis cylinders and moves from cell to cell via the synapses. In about 90 per cent of patients the spinal roots appear to be the paths of advance, in others, the vagus or glossopharyngeus. When cranial nerves serve as the path for invasion, primary bulbar paralysis seems usually to result. It is practically certain that the virus enters the organism through the mucous membranes of the digestive canal and that the infection reaches the central nervous system by way of the peripheral nerves. Deposit of virus apparently occurs regularly in the regional lymph nodes. On the basis of observations in two spontaneous epidemics of poliomyelitis in a mouse colony, the hypothesis is advanced that disorganization of the lymph nodes in the course of an intercurrent nonpoliomyelitic disease favors contact between the virus and the exposed nerve fibers, the true portal of entry of the virus thus being the lymph nodes. This hypothesis is suggested also for human poliomyelitis. Intracellular virus is protected against the action of antibodies, but if the hypothesis mentioned is valid there is a possibility of neutralizing the virus on its way to and in the lymph nodes. Active immunization with inactivated virus might afford a means of prophylaxis. Experiments on mice with formaldehyde-purified and concentrated virus preparations show that good protection can be obtained against peripheral infection with at least 10,000 lethal doses. An excess of formaldehyde easily destroys the immunizing capacity of the virus, and preparation of the virus must therefore be carried out under standardized conditions.

Revista Med. d. Ateneo Ramon y Cajal, Mexico, D. F.

6:577-670 (June) 1947). **Partial Index**

*Histopathologic Diagnosis of Cerebral Tumors. F. von Lichtenberg.—p. 598.

Histopathologic Diagnosis of Cerebral Tumors.—Lichtenberg describes a modified technic of Rio Hortega's method of silver impregnation for the differential histopathologic diagnosis of cerebral tumors of neuronal or neuroglial origin. The diagnosis is made on (1) the structure of tumor cells and their mode of grouping; (2) differentiation of tumor cells from normal nervous cells included in the tumor and (3) the marginal reaction caused by the tumor. Cellular formation in rosettes and isolated necrobiosis are characteristic of tumors of neuronal origin, whereas the presence of gliovascular structure, of circumscribed necrosis with anemic infarcts, of giant polymorphonuclear cells and the intense mobilization of microglia toward the necrotic zones are characteristic of tumors of neuroglial origin.

Book Notices

The Pharmacopœia of the United States of America (The United States Pharmacopœia). Thirteenth Revision (U. S. P. XIII). By Authority of the United States Pharmacopœial Convention Meeting at Washington, D. C., May 14 and 15, 1940. Prepared by the Committee of Revision and published by the Board of Trustees. Official from April 1, 1947. Fabrikoid. Price, $8. (Outside of the U. S., $8.50.) Pp. 957. Mack Publishing Co., 20th and Northampton Sts., Easton, Pennsylvania, 1947.

The thirteenth revision of the Pharmacopeia of the United States of America became official on April 1, 1947. Since 1820 the Pharmacopeia has served a useful purpose, but its importance is today increased many fold because of the gradual elimination of products that do not necessarily reflect the best in therapeutics, even though they are widely used, and because this book has become official in many countries other than the United States. It is a standard textbook for medical and pharmacy students. It should be more widely followed by the practicing medical profession. An extra companion volume to the Pharmacopeia is the Epitome of the U. S. Pharmacopeia and National Formulary, which is published under the auspices of the Council on Pharmacy and Chemistry. The members of the General Committee of Revision and of the various additional committees and boards, and the Board of Trustees of the Pharmacopeia can look with much satisfaction on the thirteenth revision. If future editions reveal the same thoughtfulness that has gone into the present edition, this publication will not only continue to be recognized as a leader in drug standardization but should become a guide for other countries which are in need of such high standards.

Surface and Radiological Anatomy for Students and General Practitioners. By A. B. Appleton, W. J. Hamilton and Ivan C. C. Tchaperoff. Rewritten by A. B. Appleton, M.A., M.D., Professor of Anatomy in the University of London and Director of the Department of Anatomy in the Medical School of St. Thomas's Hospital, London. W. J. Hamilton, M.D., D.Sc., F.R.S.E., Regius Professor of Anatomy in the University of Glasgow and G. Simon, M.D., B.Ch., D.M.R.E., Demonstrator of Radiological Anatomy in the Medical College of St. Bartholomew's Hospital, London. Second edition. Cloth. Price, $7. Pp. 332, with 390 illustrations. Williams & Wilkins Co., Mount Royal & Guilford Aves., Baltimore 2, 1946.

Increasing recognition is being accorded the need of including radiologic anatomy in the medical curriculum. Many medical schools have already made this advance and have allotted two or more semesters to radiologic anatomy, which is taught not only by lantern slides and charts but by roentgenograms and by fluoroscopic demonstrations. The accurate recognition of pathologic conditions in the roentgenogram or on the fluoroscopic screen depends on thorough familiarity with the recognition of the normal and especially the borderlines of the normal and the beginnings of the pathologic.

This edition has many improvements over the first, especially in the quality of the roentgenographic and photographic reproductions. It constitutes an admirable textbook for the teaching of radiologic anatomy.

Arteriosclerosis de las extremidades. Por el Dr. F. Martorell, jefe de la Sección de cirugía vascular del Instituto policlínico de Barcelona. Paper. Price, 20 pesetas. Pp. 74, with 10 illustrations. Ediciones B. Y. P., Calle Calabria, 66 al 76, Barcelona, 1947.

This small monograph is one of a series collected for the instruction of the Spanish medical profession and as such is a concise, practical treatise on the subject of peripheral vascular sclerosis. The author has been chief of the Vascular Clinic of the Policlinic in Barcelona and has made several valuable contributions to the subject. He uses simple black and white diagrams to illustrate his points and describes the various syndromes very well. The only type of treatment which is unfamiliar to the American reader is that with a specially prepared splenic extract, which is said to increase the cholesterol level of the patient by mobilizing it from the tissues. The evidence for the value of this treatment is far from being conclusive but, just like lipocaic, deserves further trial. The study of this monograph reveals the encouraging fact that young, well trained surgeons are now available in war torn Spain who can exert a vast influence on graduate medical training in that country.

Der Blutspender. Von Dr. H. Willenegger und Dr. R. Boltel. Mit einem Geleitwort von Oberst Dr. H. Remund, Rotkreuzchefarzt. Cloth. Price, 10 Swiss francs. Pp. 197, with 48 illustrations. Benno Schwabe & Co., Klosterberg 27, Basel, 1947.

This book on blood transfusion is unique in that the problem of the donor is the primary consideration. An excellent and well illustrated history of transfusion is given, and a detailed description of the development of different methods is presented, with material gathered in World War I, the Spanish civil war and World War II. There are many interesting data on blood banks and the use of preserved plasma in different parts of the world. The psychologic aspects of the donor, his health and the effects of the venesection and a comprehensive section on blood groups and subgroups are presented in a clear and simple manner. A section on laws, rules and regulations concerning blood transfusion in various countries is of use for reference purposes. The book has much material not easily available in the scattered literature and is a valuable contribution to the literature on blood transfusion.

Medical Aspects of Growing Old. By A. T. Todd, M.B., M.R.C.P. Cloth. Price, $3.50; 15s. Pp. 164. William Wood & Co., Mount Royal & Guilford Aves., Baltimore 2; John Wright & Sons, Ltd., Gaunt House, 28 Orchard St., Bristol 1, England, 1946.

Much in this little book is good, but there is some that is bad. On page 147 one reads that the prostate, like the tonsil, "is to some extent a vested interest of the surgeon." The implication is that it is operated on too often. Dr. Todd's method of handling the situation is to give testosterone, which he thinks cures even those with much residual urine and uremic symptoms! It is doubtful that any urologist would agree with that. Dr. Todd does not seem to have heard of the transurethral type of prostatectomy, which is so easy on the patient, which has almost no immediate mortality and which keeps the patient in the hospital only four or five days. Not knowing of this great advance in surgery, Todd thinks it better that an old man resign himself to leading a catheter life!

On page 44, Dr. Todd seems to be unduly concerned over the use of sleeping tablets. He thinks they injure the liver and are likely to produce a dangerous habit. Again, many physicians would not agree with him.

On page 56 one reads "the cause of allergy is simple enough: it is due to a small focus of infection being not strong enough to cause immunity processes." This news will doubtless startle many allergists.

On page 91, Dr. Todd suggests ballet dancing exercises for the treatment of constipation. He does not explain why many a husky farmer who works all day in the field suffers from constipation. The book cannot be recommended.

The Physical Background of Perception. By E. D. Adrian, O.M., F.R.S. Being the Waynflete Lectures Delivered in the College of St. Mary Magdalen, Oxford, in Hilary Term 1946. Cloth. Price, $3.25. Pp. 95, with 21 illustrations. Oxford University Press, 114 Fifth Ave., New York 11; Amen House, Warwick Sq., London, E. C. 4, 1947.

In a series of six lectures delivered in the Hall of Magdalen College, Oxford, in Hilary term 1946, the results of physiologic research on the central nervous system as regards motor and sensory areas and their relationship to the motor and sensory organs and structures of the body are given in nontechnical terms. In a lucid description of investigative methods employed and their probable significance to consideration of an overall mechanism which correlates motor and sensory activities, the nature of nerve impulses is claimed to be in the nature of electrical discharge in rhythm that can be measured in terms of volts and rate of discharge and rate of travel.

The final objective of such research is to find out how the activity of the brain is related to that of the mind. The functions of only a few portions of the brain have been investigated, and possibly only a few of the functions of those portions are known. The regions of the surface of the cerebral hemispheres which have connections with other parts of the nervous system by direct pathways are called "projection areas," those with none are called "association" or silent areas. The functional activities of the latter are not yet known. The five main projection areas have been investigated by tapping the circuit and

recording the character of the impulse that travels from one part of the body, say, an area in the leg, through its course to an area of the brain cortex that is known to receive the impulse. The gap between the receipt of a sensory impulse and a purposeful motor reaction is probably where the mind comes in. "A limited destruction in the area does not abolish all tactile sensation from the corresponding part of the body surface. Apparently the sensory information must reach the cortex by the normal route if full use is to be made of it, but it can produce some effect on the mind although a detailed cortical map is impossible" (p. 37). Much has been learned about the localization of different points in the cortex by electric stimulation. The map of the sensory area obtained by stimulating the cortex in man agrees with that found in animals by recording the arrival of the sensory messages from different parts of the body. There is decided difference in the size of the corresponding areas, however, which gives rise to interesting speculation on the function of the silent areas.

As a physiologist the author has approached the relation between mind and matter from the side of the nervous mechanism and concurs with the rather mechanistic view of the mind which Craik put forward in his book, "The Nature of Explanation." The lectures are sequential but not rewritten as a book, and no conclusions are proposed.

Die Bluteiweisskörper des Menschen: Untersuchungsmethoden und deren klinisch-praktische Bedeutung. Von P.-D. Dr. med. F. Wuhrmann, Oberarzt der Med. Universitätsklinik Zürich, und Dr. Ing. Chem. Ch. Wunderly, wissenschaftlicher Oberassistent der Med. Universitätsklinik Zürich. Unter Mitarbeit von Prof. F. Leuthardt, Direktor des physiol. chem. Inst. der Universität Genf, Prof. R. Signer, Direktor des Inst. für organische Chemie der Universität Bern, und Dr. Ing. Chem. E. Wiedemann, wissenschaftl. Mitarbeiter in Chem.-pharmazeut. Laboratorium der Sandoz AG. Basel. Mit einem Vorwort von Prof. W. Löffler und Prof. A. Stoll. Cloth. Price, 36 Swiss francs. Pp. 354, with 151 illustrations. Benno Schwabe & Co., Klosterberg 27, Basel, 1947.

This excellent study of blood proteins covers their chemistry, methods of study, reactions, clinical significance, diseases in which there are quantitative or qualitative abnormalities, mechanism of production and therapeutic problems. The data obtained by electrophoresis and ultracentrifugation are presented and analyzed, and the subject of sedimentation rate of red blood corpuscles is discussed in detail. The material is well presented and covers a remarkable amount of chemical and clinical data. The bibliography is quite representative and the references are brought up to 1946. The book is beautifully printed and well edited. It will no doubt become one of the standard practical reference works on the subject.

Roentgen Interpretation. By George W. Holmes, M.D., and Laurence L. Robbins, M.D., Radiologist-in-Chief to the Massachusetts General Hospital and Associate in Radiology, Harvard Medical School, Boston. Seventh edition. Cloth. Price, $7. Pp. 398, with 266 illustrations. Lea & Febiger, South Washington Square, Philadelphia 6, 1947.

The preparation of a textbook for undergraduate instruction in radiologic diagnosis requires much care. As with many other specialties, the undergraduate course in radiology can hope to accomplish little more than to give students a bird's eye view of the field of radiology, acquainting them with the possibilities of radiologic diagnosis and with the characteristics of an adequate x-ray study in the more common applications of diagnostic x-ray. The medical curriculum has become so crowded that the teacher of radiology finds it difficult to secure enough hours for didactic work to give the student more than an introduction to radiology. Holmes and Robbins in this admirable textbook have succeeded in providing an ideal vehicle for imparting a basic understanding of radiologic diagnosis. Many larger books have been written, some of them voluminous. Few have expressed so much, so well in such brief space.

Nomenclatura padrão das doenças e nomenclatura padrão das operações. Editada por Edwin P. Jordan, M.D. Second brazilian edition, translated from the third American edition by B. Cândido de Andrade e Luiz de Freitas Guimarães, Jr. Cloth. Pp. 1022, with 4 illustrations. A Casa do Livro Ltda, Rua S. José, 61, Rio de Janeiro, 1945.

The volume is a translation into Portuguese of the third edition of the "Standard Nomenclature of Disease and Standard Nomenclature of Operations." The translation was faithfully carried out under the editorship of Drs. B. Candido de Andrade, Luiz de Freitas Guimarães and their associates.

Diseases of the Skin. By James H. Sequeira, M.D., F.R.C.P., F.R.C.S., John T. Ingram, M.D., F.R.C.P., Physician in Charge, Skin Department, The General Infirmary at Leeds, and Reginald T. Brain, M.D., F.R.C.P., Physician in Charge, Skin Departments at the Royal Free Hospital and The Hospital for Sick Children, Great Ormond Street, London. Fifth edition. Cloth. Price, $15. Pp. 782, with 443 illustrations. Macmillan Company, 60 5th Ave., New York 11, 1947.

This edition is notable for the inclusion of up to the minute information and for the thorough way it covers the field. The effort has been to mention the essentials. Few references to the literature are given, only those considered essential. The attention given to tropical diseases adds much to the value of the book. Exception might be taken to the practice of recommending 2 per cent phenol in water lotions. These if used as wet dressings would approach the danger mark. While not encyclopedic, the book is a valuable addition to the library of the general practitioner as well as to that of the dermatologist. It is well written and well illustrated, and the printer has done an excellent job.

Fatty Acids: Their Chemistry and Physical Properties. By Klare S. Markley, Principal Chemist—Oil, Fat, and Protein Division, Southern Regional Research Laboratory, United States Department of Agriculture, New Orleans, La. Cloth. Price, $10. Pp. 668, with 81 illustrations. Interscience Publishers, Inc., 215 Fourth Ave., New York 3. 1947.

A book that deals with the chemical and physical properties of fatty acids normally would be considered as of interest only to those in the field of chemistry, physiology and a few closely related subjects. However, today medicine has advanced so that it is necessary as never before to understand the chemistry of cellular activities and the substances that may affect these activities. This book provides information on the nature and history of fats and waxes, classification and structure of the fatty acids, their physical properties and chemical reactions, the synthesis of fatty acids, and isolation and identification of fatty acids. This 600 page volume should prove useful for teaching purposes and collateral reading. It should also be read by those in medicine who are interested in fatty acids.

A Manual of Otology, Rhinology and Laryngology. By Howard Charles Ballenger, M.D., F.A.C.S., Associate Professor and Acting Chairman of the Department of Otolaryngology, Northwestern University School of Medicine, Chicago. Third edition. Cloth. Price, $4.50. Pp. 352, with 138 illustrations. Lea & Febiger, South Washington Square, Philadelphia 6, 1947.

This edition of Ballenger's little book brings it up to date with revisions, new chapters and new illustrations. These are done with brevity and clarity. The new chapter on headaches and neuralgias is particularly welcome. Considering its size, the book is remarkably complete in its coverage. This is accomplished through the elimination of excess verbiage and reduction of the text to bare essentials. It should be of particular value to undergraduate students who must carry an unusually heavy burden of reading. Students need facts to support clinical observations acquired at the bedside, and these they will find most concisely presented in this book.

Heredity and Variation in Microorganisms. Cold Spring Harbor Symposia on Quantitative Biology. Volume XI. Cloth. Price, $6. Pp. 314, with 197 illustrations. The Biological Laboratory, Cold Spring Harbor, L. I., New York, 1946.

This volume represents a continuation of the early symposiums on quantitative biology. It reflects the thoughts of experts not only in the United States but from other countries and provides information on viruses, bacteria, fungi and other micro-organisms. The papers are, of course, probably too detailed for many engaged in the practice of medicine, but it is the sort of project that is needed for teaching and that provides helpful information for the research minded.

Law and the Practice of Medicine. By Kenneth George Gray, M.D., B.Sc., K.C. Cloth. Price, $1.50. Pp. 68. Ryerson Press. 299 Queen St. W., Toronto 2, 1947.

This book is too brief to be of much practical value to physicians in this country. It contains material assembled by the author in the course of his lectures to medical students in the medical school of the University of Toronto and in his work as legal adviser to the Department of Health and Hospitals of Ontario. Its contents reflect the Canadian law. As a guide—but only as such—it will be of value to Canadian medical students and physicians.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

SODIUM CITRATE IN TRANSFUSED BLOOD

To the Editor:—In reference to the query about the post-transfusion death in an infant (The Journal, March 15, 1947, p. 811), what effect would the relatively large amount of citrate present have? I recently saw a similar hemorrhagic phenomenon in an adult receiving eighteen transfusions (500 cc. each) over a period of two days.

S. Richard Horio, M.D., Honolulu, T. H.

ANSWER.—Possible toxic effects of excessive amounts of sodium citrate in transfused blood have been considered in recent publications. Ivy and his associates (*Surg., Gynec. & Obst.* **76**:85 [Jan.] 1943) reported considerably higher mortality in dogs whose blood was removed and replaced with citrated blood than in control animals treated similarly with heparinized blood. They concluded that "when a patient has suffered a massive hemorrhage citrated plasma or citrated whole blood should be given slowly and with the idea in mind that a total dose of 1.5 Gm. for each 10 pounds of body weight may prove to be lethal. In fact, our results indicate that 0.11 to 0.15 Gm. of sodium citrate per kilogram may be fatal when given in plasma or whole blood after a massive hemorrhage. That is, 1,500 to 2,500 cc. of citrated whole blood or plasma given rather rapidly to a 70 kilogram person after a massive hemorrhage may prove to be fatally toxic." Thornton and his associates (*Surgery* **18**:595 [Nov.] 1945) confirmed Ivy's results but concluded that the effect was due to two factors: (1) the amount of liquid added with the citrate and not to the chemical and (2) the speed of the injection, which could not possibly be duplicated in human transfusions. Allen and his associates (*Surgery* **15**:824 [May] 1944) reported examples of transfusions of very large amounts of citrated blood without any ill effects. Nine of their patients received 20 Gm. or more of citrate (one as much as 40 Gm.) without incident. They conclude that "much of the recent concern over citrate intoxication associated with massive transfusions would seem to be unwarranted from the study of the patients presented here." According to them, Ivy's experiments do not simulate conditions seen clinically in man. One would have to inject 4 liters of blood in five minutes to a 154 pound man to have a comparable effect.

In none of the reported experiments have hemorrhagic phenomena been described similar to those in the infant of the query of March 15 and in the adult of this query. Hill and Muirhead (*Surg., Gynec. & Obst.* **77**:113 [Aug.] 1943) described citrate reactions as characterized by generalized tingling sensations, apprehension, dilatation of pupils, carpopedal spasm, tetany, positive Chvostek's sign and general rigidity. Occasionally, cyanosis was seen and transient apnea. Post-transfusion hemorrhages are also extremely rare in man. In this connection it is interesting to record that shortening of coagulation time was observed following transfusion of citrated blood (Lewisohn, R.: *M. Rec.* **87**:141, 1915) and that it has actually been recommended as a means of stopping internal hemorrhage (Neuhof and Hirschfeld, S.: *New York M. J.* **113**:95 [Jan. 15] 1921). Injury of platelets by the citrate was the suggested explanation.

It is assumed that the amount of sodium citrate was within the recommended limits. It has been stated that some diseases decrease the tolerance to sodium citrate probably by delay of detoxification and elimination. Without information regarding the patient's clinical condition and the speed of transfusion no definite answer can be given. However, on the basis of available information the hemorrhagic phenomenon in the adult patient who received eighteen transfusions (9,000 cc.) in forty-eight hours was probably not caused by the citrate in the transfused blood. The volume of the transfused blood, and possibly the rate of the injection, and the clinical condition of the patient, have probably been the responsible factors.

STREPTOMYCIN AND PENICILLIN IN SAME SYRINGE

To the Editor:—Can streptomycin and penicillin be given simultaneously in the same syringe? This is a frequent question at our hospital.

R. S. Srigley, M.D., Ardmore, Okla.

ANSWER.—There are no objections to giving streptomycin and penicillin in the same syringe. The two drugs are not incompatible when given at the same time.

BLOOD IN THE SEMINAL FLUID

To the Editor:—A man aged 68, married, the father of six children, for the last year has noticed an increasing amount of blood in the ejaculated fluid. There are no urinary symptoms or microscopic findings in the urine. Orgasms are not entirely free from discomfort since the trouble began. What is the cause and what treatment is recommended for this condition? Can you refer me to a treatise on this subject?

M.D., California.

ANSWER.—The cause of bloody seminal fluid (hemospermia) is obscure. Investigation of the patient should include studies of expressed prostatic and vesicular fluid, if possible fractional examination of the ejaculate for leukocytes, spermatozoa and erythrocytes, cystoscopic examination and visualization of the seminal vesicles. Bright blood usually means that the bleeding is coming from granulation tissue traumatized during ejaculation. This type most likely arises from granulations in the prostatic urethra associated with chronic prostatitis with or without prostatic diverticula or prostatic stones. Necropsy revealed the presence of prostatic microlithiasis and chronic granular prostatic urethritis in a man aged 42 with bright blood hemospermia who died suddenly with pulmonary embolus following noncontributory surgery.

The presence of dark blood in the ejaculate suggests old bleeding in the seminal vesicle. Robert H. Herbst and James W. Merricks (*Illinois M. J.* **86**:190 [Oct.] 1944) have obtained old blood on aspirating seminal vesicle contents after catheterizing the ejaculatory ducts in younger patients. In older patients prostatic hyperplasia, with or without dilated surface veins, and prostatic calculi in infected prostatic follicles either may be the direct cause of hemospermia or may produce pressure on the ejaculatory ducts with consequent stasis in the vesicle. Neoplasm of the vesicle is very rare.

Many instances of hemospermia disappear in a short time after little or no treatment. Vitamins C and especially E may be given with benefit, because deprivation of vitamin E in the rat seems to cause degeneration of the vesicle epithelium. Some patients respond to estrogens, but symptoms recur on stopping them. Irrigation of the seminal vesicle with mild silver nitrate solutions has benefited some patients. Removal of an obstructing prostate may be necessary. Severe treatments of the verumontanum with strong caustics or the coagulating current seem likely to cause further scarring and obstruction of already disturbed ejaculatory ducts.

SPONTANEOUS RUPTURE OF UTERUS

To the Editor:—I should like to know the incidence of spontaneous rupture of the uterus. This occurred without the patient having any drugs or manipulation, the rupture occurring in the cervix anterior and tearing part of the vagina. The bladder was completely dislodged from the uterus without tearing into the bladder. The fetus and placenta were free in the abdomen. The patient was 32 years old and had had five spontaneous deliveries previously, all children weighing from 9 to 11 pounds, 4,000 to 5,000 Gm. This fetus weighed 9 pounds 8 ounces (4,309 Gm.). There was only 3 or 4 ounces of blood in the abdomen and a remarkably small amount lost by the vagina. The patient was never in any particular pain and not in shock. If you can supply me with any information on this subject, spontaneous rupture of the uterus, I will appreciate it.

M.D., Florida.

ANSWER.—Spontaneous rupture of the uterus (exclusive of rupture of cesarean section scars) occurs about once in every 3,000 pregnancies. The accident is particularly likely to take place in women of great parity. In a number of studies made of this complication, the average parity has ranged in the neighborhood of 6. Hence these uteri which have gone through many pregnancies apparently suffer alterations which make them less elastic and more prone to rupture. When in such cases disproportion is superimposed, or when the baby is excessive in size, the additional strain may be too much for the uterine muscle to withstand, and rupture ensues.

The case history cited exemplified these two aspects of spontaneous rupture of the uterus in that the patient was in her sixth pregnancy and the baby weighed 9½ pounds. The case is also characteristic of a certain minority of these accidents from the point of view that there was neither pain nor shock. The absence of the classic picture of pain and shock may mask the true diagnosis in some of these cases many hours; as a result, operation is often grievously delayed with dire effects on the maternal outlook.

As occurred in this case, the bladder is frequently dislodged from the uterus in conjunction with the rupture, and the associated tugging on the bladder wall often ruptures vessels in the mucosa and gives rise to grossly bloody urine—a helpful diagnostic finding. In rare instances the strain on the bladder may be so great as to produce actual rupture of that organ.

Spontaneous rupture of the uterus is one of the gravest complications of obstetrics and carries a maternal mortality of about 40 per cent and a fetal mortality above 90 per cent. The treatment is hysterectomy, preceded, accompanied and followed by blood transfusions and penicillin.

PROPHYLAXIS IN A PROLONGED AND DIFFICULT LABOR

To the Editor:—Is there any scientific basis for the prophylactic use of penicillin and/or chemotherapy? The patient in mind is a primigravida aged 27 at term with ruptured membranes for six hours before onset of labor. External pelvimetry reported interspinous 25 cm., intercristal 27 cm., intertrochanteric 32 cm., external conjugate 17 cm., left sacroanterior presentation. Difficult labor anticipated. First stage 30+ hours. Second stage 10+ hours. If indicated, when should prophylaxis begin? Please omit name.

M.D., New York.

ANSWER.—Prophylactic chemotherapy is sound practice under certain circumstances. An example is the prophylactic use of the sulfonamides for meningococcic meningitis when instituted at the onset of the outbreak in a relatively closed group. Under such conditions healthy persons who have been exposed have been protected against the infection, and serious epidemics have been averted. There is less evidence available that prophylactic therapy with penicillin or one of the sulfonamides would be effective for the case mentioned. In a prolonged and difficult labor one is most concerned with invasion of the tissue by highly pathogenic bacteria such as hemolytic streptococci and staphylococci. A suggested prophylactic procedure is to give intramuscularly 300,000 units of penicillin in peanut oil and beeswax at the onset of labor and then repeat this dose every twenty-four hours until two or three days after delivery.

CHOLECYSTITIS AND CANCER OF GALLBLADDER

To the Editor:—I am 61 years old and last June I had an acute cholecysitis attack during which I lost 25 pounds (11.3 Kg.). In August I had a cholecystogram which showed a nonfunctioning gallbladder with a large amount of calcareous material. The present cholecystogram still shows a collapsed or nonfunctioning gallbladder. Most all of the calcareous material is gone. I feel fine, eat well and weigh 170 pounds (77 Kg.). Should I have my gallbladder removed? If not, will the condition damage the liver or cause cancer?

William H. Wymard, M.D., Pittsburgh.

ANSWER.—Under these circumstances the patient's interests would be best served by an exploration of the gallbladder and common duct. The disappearance of the calcareous material following an acute attack of cholecytitis suggests the possible formation of a cholecystoenteric fistula, which, if present, is likely to give further symptoms in the future. It is rare for serious hepatic injury to follow cholecystitis alone; if stones are present in the common duct, cholangitis and periportal fibrosis may develop, of course. The mathematical chance of cancer developing in the gallbladder containing stones is not great, but it is a well established fact that neoplasm of the bile passages is almost invariably associated with the presence of stones.

DYSTROPHIA ADIPOSA GENITALIS WITH STERILITY

To the Editor:—A man aged 34, weighing 218 pounds (99 Kg.) and 6 feet (183 cm.) tall has dystrophia adiposa genitalis with the chief complaint of no progeny after ten years of married life. Physical examination shows breast enlargement, female escutcheon, fat deposits about the hips and thighs and definite bilateral gonadal hypoplasia. An examination of a condom specimen of the semen revealed about 1 cc. volume and no spermatozoa. Should a case of this nature be treated with anterior pituitary hormone of pituitary origin or of pregnant mare serum or with chorionic gonadotropin?

M.D., New York.

ANSWER.—If repeated condom specimens show azoospermia, treatment with any endocrine preparation is probably useless. The inquiry does not state whether a testicular biopsy has been performed to differentiate between lack of spermatozoon production and obstruction in the vas deferens of the epididymis.

Theoretically sperm production is stimulated by pregnant mare's serum extract while the Leydig cell function and testosterone formation are increased by chorionic gonadotropin. Both of these actions are enhanced by the concomitant use of thyroid in small to moderate doses.

It appears that this patient is best treated by correcting his general condition of Froehlich's type syndrome with diet, thyroid and injections of testosterone propionate or possibly testosterone implantation. The use of gonadotropic hormone will probably not be effective. Such a therapy may improve the general condition but is not likely to have any effect on spermatogenesis. The possibility of donor insemination of the wife should be considered.

AZOOSPERMIA

To the Editor:—I have a patient with azoospermia and would like to know if this might be the result of combat flight. He served in the Army Air Corps and had over 250 hours of combat in pursuit planes. He states that this time was spent in misery because of pain in the scrotum and groins, but he could not go on sick call as he was squadron leader. Is it possible that sterility might result from this cause and if so, what treatment, if any, is indicated?

Edmund A. Flexman, M.D., Milledgeville, Ill.

ANSWER.—There is no reasonable relation between azoospermia and combat flight. A parachute harness which the fliers were obliged to wear would cause no pressure on normally constituted genital organs. Prostatitis could cause the pain but certainly not the azoospermia. At least three specimens should be examined before the diagnosis of azoospermia can be established. As regards treatment, there is no indication for hormone stimulation if no sperms are noted on the ejaculation specimen. In this event, biopsy of the testicle would be indicated for evidence of normal spermatogenesis before surgical anastomosis of the conducting system is attempted.

SUPPRESSION OF LACTATION

To the Editor:—A woman had a breast abscess in her first childbirth. Two years later, in her second childbirth, the breast was blocked with several abscesses which make her suffer severely. Now, after two months, she is going to have a baby and she is awfully afraid for her breast trouble. What could I do to suppress lactation? Would estrogenic substance do any good? If so, when must I start to use it, what quantity and how often?

M.D., Cuba.

ANSWER.—The administration of estrogens will prevent breast engorgement and suppress lactation. The patient may take 5 mg. of diethylstilbestrol each day beginning the day of delivery and continuing for eight or ten days. Little or no discomfort will result. About a week or so after the cessation of therapy some milk secretion may occur; however, treatment is not necessary, for it will disappear spontaneously in a few days.

BURNING SENSATION OF TONGUE

To the Editor:—*The Journal*, Aug. 9, 1947, page 1276, under "Queries and Minor Notes" answers a query in reference to a burning sensation of the tongue. The numerous causes of this distressing complaint are gone into carefully except in one respect. There is only slight mention of the effect of the fluid in which the tongue is bathed (saliva) as the cause of a burning sensation. After specific avitaminotic affections of the tongue and pernicious anemia have been ruled out, one should think of the possibility of a thickened, ropy salivary secretion as a cause of this symptom. Some patients have saliva which is so tenacious that when the mouth is opened it appears as thin strings hanging from the palate to the tongue. Some of these patients are heavy smokers, while others are not. They may complain of dryness of the mouth in addition to the burning sensation of the tongue. We have had 8 patients in the past two years with this symptom due to tenacious salivary secretion. One of us (L. P.) has already shown that parasympathetic stimulation will produce the flow of a voluminous amount of thin salivary secretion (Am. J. Digest Dis. & Nutrition, 9:417 [Dec.] 1942). Therefore it seemed logical to use in these cases neostigmine bromide tablets (one-half tablet, 7.5 mg. three times a day after meals). Very soon thereafter there occurred a thin, copious salivary secretion. Within a few days the burning of the tongue ceased or decidedly diminished. If smoking was a factor in the cause of the condition it would naturally be interdicted.

Louis Pelner, M.D., and Samuel Waldman, M.D., Brooklyn.

BLEEDING AT TIME OF OVULATION

To the Editor:—In the section Queries and Minor Notes, in the Aug. 9, 1947, issue of *The Journal*, "Conception and Menstruation" were discussed.

Five per cent of menstruating women have macroscopic bleeding, 10 per cent of women will notice spotting if looked for and 75 per cent have microscopic bleeding at the time of ovulation.

The Germans call it "Kleine Regel," and it is comparable to estrous bleeding in lower animals. It is not a menstruation but is occasionally mistaken for one. This is the most fertile period for these women.

William E. Hunter, M.D., Los Angeles.

ENURESIS

To the Editor:—In the Journal of September 6, page 70, in answer to a query regarding enuresis in a young woman, "investigation of the urinary tract, genital tract, vertebral column, neurologic system and metabolism, and possibly psychologic study" was recommended.

I was surprised at that word "possibly." Is it not pretty well recognized today that enuresis is one of the commonest of neurotic symptoms? It would seem to me that the most important investigation is a personality and psychologic study and that the most successful treatment is along these lines.

R. M. Truitt Jr., M.D., Philadelphia.